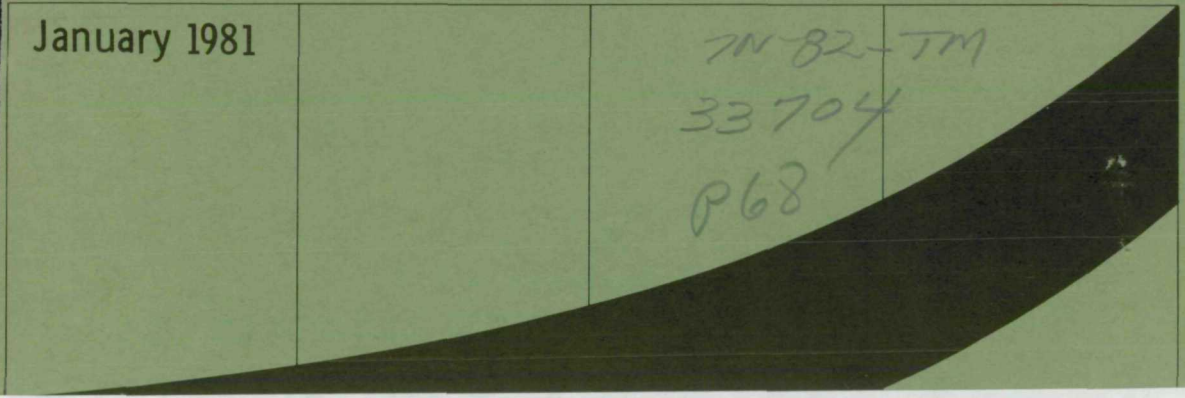
NASA Pocket Statistics

P. F. Eckert

January 1981



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Foreword

Pocket Statistics is published annually for the use of NASA managers and their immediate staffs. Included is a summary of the NASA Program goals and objectives, major mission performance, USSR spaceflights, summary comparisons of the USA and USSR space records, and selected technical, financial, and manpower data.

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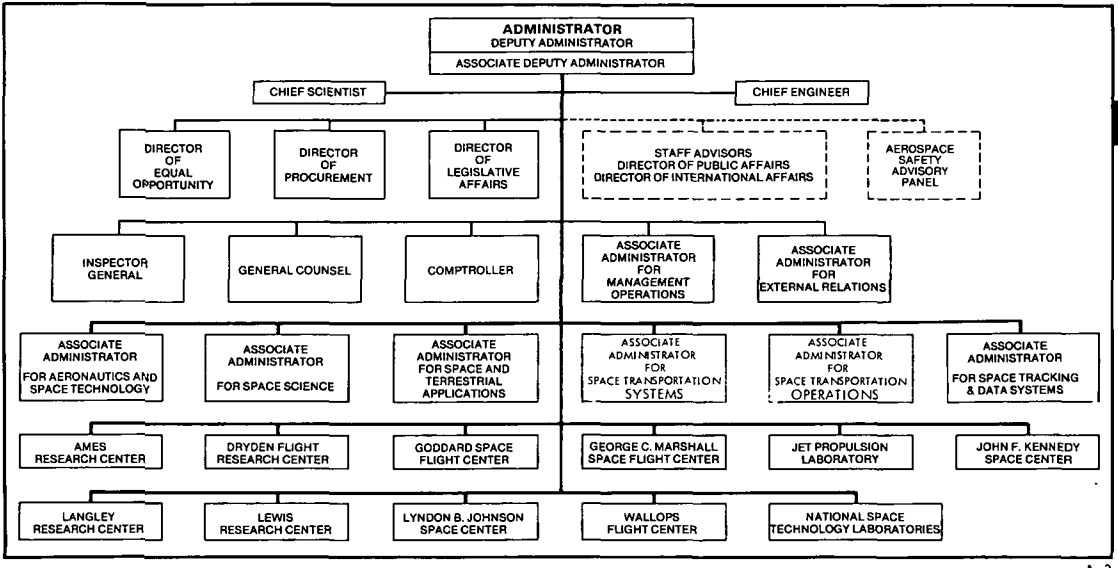
Section A

U. S. Space Policy & Program Goals

NASA ORGANIZATION



National Aeronautics And Space Act Of 1958

The Declaration of Policy and Purpose of the National Aeronautics and Space Act is outlined in Section 102 (a) through (c) of PL 85-568 as follows:

Sec. 102. (a) The Congress hereby declares that it is the policy of the United States that activities in space should be devoted to peaceful purposes for the benefit of all mankind.

(b) The Congress declares that the general welfare and security of the United States require that adequate provision be made for aeronautical and space activities. The Congress further declares that such activities shall be the responsibility of, and shall be directed by, a civilian agency exercising control over aeronautical and space activities sponsored by the United States, except that activities peculiar to or primarily associated with the development of weapons systems, military operations, or the defense of the United States (including the research and development necessary to make effective provision for the defense of the United States) shall be the responsibility of, and shall be directed by, the Department of Defense; and that determination as to which such agency has responsibility for and direction of any such activity shall be made by the President in conformity with section 201 (e).

(c) The aeronautical and space activities of the United States shall be conducted so as to contribute materially to one or more of the following objectives:

(1) The expansion of human knowledge of phenomena in the atmosphere and space;

(2) The improvement of the usefulness, performance, speed, safety, and efficiency of aeronautical and space vehicles;

(3) The development and operation of vehicles capable of carrying instruments, equipment, supplies, and living organisms through space;

(4) The establishment of long-range studies of the potential benefits to be gained from the opportunities for, and the problems involved in the utilization of aeronautical and space activities for peaceful and scientific purposes;

(5) The preservation of the role of the United States as a leader in aeronautical and space science and technology and in the application thereof to the conduct of peaceful activities within and outside the atmosphere;

(6) The making available to agencies directly concerned with national defense of discoveries that have military value or significance, and the furnishing by such agencies, to the civilian agency established to direct and control nonmilitary aeronautical and space activities, of information as to discoveries which have value or significance to that agency;

(7) Cooperation by the United States with other nations and groups of nations in work done pursuant to this Act and in the peaceful application of the results thereof; and

(8) The most effective utilization of the scientific and engineering resources of the United States, with close cooperation among all interested agencies of the United States in order to avoid unnecessary duplication of effort, facilities, and equipment.

NASA GOALS

National aerospace goals, established by the President and the Congress, are directly reflected in the NASA aerospace missions, and in the principal programs identified in its budget submission. The national aerospace goals (U.S. Civil Space Policy) for the next decade are as follows:

- Emphasize space applications that will bring important benefits to our understanding of Earth resources, climate, weather, pollution and agriculture, and provide for the private sector to take an increasing responsibility in remote sensing and other applications.
- Emphasize space science and exploration in a manner that retains the challenge and excitement and permits the nation to retain the vitality of its space technology base, yet provides short-term flexibility to impose fiscal constraints when conditions warrant.
- Take advantage of the flexibility of the space shuttle to reduce the cost of operating space over the next two decades to meet national needs.
- Increase benefits for resources expended through better integration and technology transfer among the national space programs and through more joint projects when appropriate, thereby increasing the return on the 100 billion investment in space to the benefit of the American people.
- Assure American scientific and technological leadership in space for the security and welfare of the nation and continue R&D necessary to provide the basis for later programmatic decisions.
- Demonstrate advanced technological capabilities in open and imaginative ways having benefit for developing as well as developed countries.
- Foster space cooperation with nations by conducting joint programs
- Confirm our support of the continued development of a legal regime for space that will assure its safe and peaceful use for the benefit of mankind.
- Continue to pursue the improvement of the usefulness, performance, speed, safety and efficiency of aeronautical and space vehicles as authorized in the Space Act of 1958.

International Cooperation
Scope, Objectives, and Guidlines

- SCOPE: Pursuant to the National Aeronautics and Space Act of 1958, NASA has developed an extensive program of international cooperation which has opened the entire range of its space activities to foreign participation. Cooperative programs and activities involving nations and groups of nations are established by (1) agency to agency memoranda of understanding (MOU's), (2) agency to agency letter agreements, or (3) more formal intergovernmental agreements. The relative complexity, cost, and duration of the program or project dictate in part the type of arrangement used to establish the cooperative effort. NASA's international activities demonstrate the many peaceful purposes and applications of space science and technology and provide opportunities for contribution by scientists and agencies of other countries to the tasks of increasing human understanding and use of the spatial environment. Cooperation also supports operating requirements for the launch and observation of spacecraft.

- OBJECTIVES: Cooperation by the United States (US) with other nations contributes to the US aeronautical and space research program and to broader national objectives by:

- Stimulating scientific and technical contributions from abroad
- Enlarging the potential for the development of the state of the art
- Providing access to foreign areas of geographic significance for measurements of space flights
- Enhancing satellite experiments by foreign ground-support programs
- Developing cost-sharing and complementary space programs
- Extending ties among scientific and national communities
- Supporting US foreign relations and foreign policy

- GUIDELINES: NASA's international activities follow guidelines which recognize the interests of the US and foreign scientists, establish a basis for sound programs of mutual value, and contribute substantively to the objectives of international cooperation. These guidelines provide for:

  - Designation by each participating government of a central civilian agency for the negotiation and supervision of joint efforts
  - Conduct of projects and activities having scientific validity and mutual interest
  - Agreement upon specific projects rather than generalized programs
  - Acceptance of financial responsibility by each participating agency for its own contributions to joint projects
  - Provision for the widest and most practicable dissemination of the results of cooperative activities

International Programs Summary

	Number Countries/ International Organizations	Number Projects/ Investigations/Actions Completed or in Progress As of January 1, 1981
COOPERATIVE ARRANGEMENTS		
Cooperative Spacecraft Projects	*8*	*36*
Experiments on NASA Spacecraft		
Experiments with Foreign Principal Investigators	14	72
US Experiments with Foreign Co-Investigators or Team Members	11	59
US Experiments on Foreign Spacecraft	3	6
Cooperative Sounding Rocket Projects	22	1,764
Joint Development Projects	4	7
Cooperative Ground-Based Projects		
Remote Sensing	53	162
Communication Satellite	51 (27)*	18
Meteorological Satellite	44 (109)**	9
Geodynamics	41	14
Space Plasma	38	5
Atmospheric Study	15	11
Support of Manned Space Flights	21	2
Support of Planetary Flights	5	6
Astronomy & Astrophysics	24	10
Cooperative Balloon and Airborne Projects		
Balloon Flights	8	8
Airborne Observations	12	19
Cooperative Aeronautical Projects	5	31
Scientific & Technical Information Exchanges	70	

	Number Countries/ International Organizations	Number Projects/ Investigations/Actions Completed or in Progress As of January 1, 1981
REIMBURSABLE LAUNCHINGS		
Launchings of Non-US Spacecraft	*12*	*86*
Foreign Launchings of NASA Spacecraft	1	4
TRACKING & DATA ACQUISITION		
NASA Overseas Tracking Stations/ Facilities	20	47
NASA Funded SAO Optical & Laser Tracking Facilities	15	20
Reimbursable Tracking Arrangements		
Support Provided by NASA	5	42
Support Received by NASA	3	12
PERSONNEL EXCHANGES		
Resident Research Associateships	45	1,151
International Fellowships	21	358
Technical Training	21	955
Foreign Visitors	126	75,890

*AIDSAT Demonstrations
**APT Stations

SPACE TRANSPORTATION SYSTEMS

Goals and Objectives

- The operational Space Transportation System will open a new era in space exploration and utilization for U.S. Government agencies, commercial firms, and foreign groups.
- Firm commitments exist for 48 operational Shuttle flights during 1982-85 representing 20 different users.
- Operational traffic forecast calls for 487 flights over a 12-year period.
- Operating costs will be recovered by NASA.
- NASA payloads will account for 40% of the operational missions, DOD for 27%, and others, including commercial and foreign users, 33%.
- Two Shuttle launch sites - Kennedy Space Center (three-fourths of flights) and, beginning in 1984, Vandenberg AFB.

- Office of Space Transportation Operations will:
  - Develop financial plans and pricing structures.
  - Provide all necessary services to potential users.
  - Manage expendable launch vehicles during transition to a fully operational fleet of orbiters.
- Office of Space Transportation Systems will:
  - Manage ground and flight testing until achievement of operational status.
  - Upgrade design and develop system improvements during operational period.

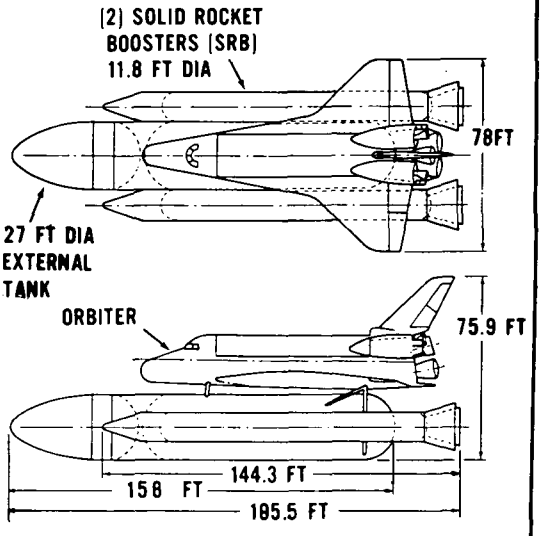
SPACE TRANSPORTATION SYSTEMS

FLIGHT INTRODUCTION - The Space Shuttle will be a manned reusable vehicle. The Shuttle will consist of a reusable orbiter, mounted piggyback at launch on a large expendable liquid propellant tank and two recoverable and reusable solid propellant rocket boosters. At launch, the two solid rockets and the orbiter's three liquid rocket engines will ignite and burn simultaneously. At an altitude of about 25 statute miles, the spent solid rocket will be detached and parachuted into the ocean for recovery and reuse. The orbiter and its propellant tank will continue ascent. After main engine cutoff, the expendable propellant tank will be jettisoned and impact into a remote ocean area. The orbiter with its crew and payload will remain in orbit to carry out its mission, normally for about 7 days. When the mission is completed, the orbiter will return to Earth and land like an airplane.

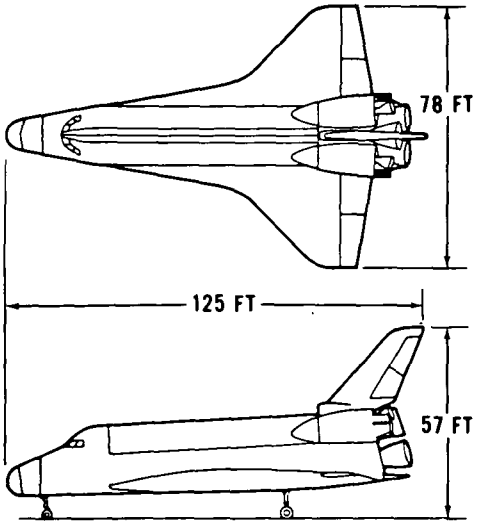
MISSION AND OPERATIONAL PLANNING - The Shuttle will carry into space virtually all of the nation's civilian and military payloads as well as many international, civilian and government payloads. These include science and applications payloads for private industry, universities, and research organizations.

The long-range Space Shuttle schedule calls for 487 flights through the mid-1990's.

In addition to the first Space Shuttle Orbiter, the Columbia, three other orbiters will comprise the Space Shuttle fleet. These are the Challenger with its first flight scheduled for November 1982, The Discovery scheduled to fly in December 1983, and the Atlantis which will make its maiden flight in March 1985.



SPACE TRANSPORTATION SYSTEMS



PROGRAM MANAGEMENT

Office of Space Transportation Systems is responsible for overall development, including establishment of overall performance requirements, research and development budget and resources requirements, program planning and the allocation and control of resources.

Office of Space Transportation Operations is responsible for the activities and logistics of operating the system for all users.

Johnson Space Center (JSC) is responsible for the day-to-day management of the program, establishing detailed performance requirements, overall systems integration, resources utilization and coordination of requirements, program scheduling, and configuration control.

Kennedy Space Center (KSC) is responsible for design of launch and recovery facilities, and will serve as the launch and landing site for the Space Shuttle development flights and for operational missions requiring launches in an easterly direction.

Marshall Space Flight Center (MSFC) is responsible for the development, production, and delivery of the orbiter main engine, the solid rocket booster, and the hydrogen-oxygen external propellant tank.

CHARACTERISTICS

- Orbiter and Booster launched vertically
- Orbiter - Reusable Delta winged manned vehicle
- Size - Same as a DC-9
- Crew - Commander, pilot, 1 mission specialist, 1 payload specialist - capacity 7
- Cargo Compartment - 15 ft dia, 60 ft long (carry loads up to 65,000 lbs)
- Launch and Reentry Speed - no more than 3 G

USES

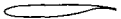
- Launch most unmanned spacecraft
- Study space near and far
- Deploy scientific & applications satellites of all types
- Service and repair satellites
- Retrieve satellites from Earth orbit
- International cooperation
- Rescue missions
- Will replace most of the expendable launch vehicles currently used

Space Science And Applications Goals

LIFE SCIENCES	To uncover the medical problems of manned spaceflight and develop solutions or counter measures; to use the space environment for conducting experiments on the influence of gravity on biological processes; to understand the origin and distribution of extraterrestrial life in the universe.
ASTROPHYSICS	To use access to space to carry out measurements of celestial objects at wavé-lengths and particle energies which cannot be measured from the ground and to conduct basic experiments making use of the unique space environment.
PLANETARY	To further our understanding of the origin and evolution of the solar system; to further our understanding of the origin and evolution of life; to further our understanding of Earth by comparative studies of the Moon and other planets; to further our understanding of near-Earth resources.
SPACELAB MISSION	To plan and conduct Spacelab and Orbiter-attached missions for NASA programs; to maintain strong interface between STS and NASA users; and to lead coordinated Science & Applications Space Platform activities.
SOLAR TERRESTRIAL	To understand the generation of energy in the Sun, its transformation into different forms and transport into interplanetary space, and its interaction with the Earth's magnetic field, and plasma and ionosphere environment; to understand the plasma processes which characterize the Earth's magneto- and ionosphere; to understand the Sun as a star.
REMOTE SENSING	Establishment of a space system to make routine global observations of Earth's atmosphere and land and water surfaces.
COMMUNICATIONS	Maintenance of U.S. leadership in satellite communications by developing and flight-proving wideband and narrow-band technology.
MATERIAL PROCESSING	Understanding gravitational effects on materials processing; applying this knowledge to ehance materials processing on Earth; and, exploitation of the space environment to produce unique, low-volume, high-value materials.
TECHNOLOGY TRANSFER	Assessment of national priorities and user needs which can benefit from deonstrations and transfer of space technologies to operational users.

AERONAUTICS RESEARCH AND TECHNOLOGY GOALS

AERONAUTICAL TECHNOLOGY PROGRAMS

PROPULSION	 Turbofans	 Turboprops	Source Noise & Pollution	Power Transmission	Alternative
AERODYNAMICS	 Supercritical Airfoils	Drag Reduction	Lift Augmentation	 Tilt Rotor	 F-4 F-16 HiMAT Maneuverability
STRUCTURES	Composite Materials	Crash-Worthy Structures 	High-Temperature Materials	Computer-Aided Design 	
ELECTRONICS	Guidance & Navigation	 Displays	Digital Fly-by-Wire	Terminal Operations	Integrated Controls	All-Weather Day-Night Operations	Active Controls

AERONAUTICAL TECHNOLOGY OBJECTIVES

	TECHNOLOGY FOR:	TIME	EFFECT
ENERGY	50% FUEL REDUCTION	1990	100 MILLION BBL/YR SAVINGS
POLLUTION	90% NO_x REDUCTION	1985	MEETS ALL CLEAN AIR RECOMMENDATIONS
PERFORMANCE	15% EFFICIENCY INCREASE	1990	REDUCED TRANSPORTATION COST
NOISE	MAXIMUM PRACTICAL *IMPROVEMENT*	CONTINUING	ELIMINATE ENVIRONMENTAL RESTRAINTS
SAFETY	MAXIMUM PRACTICAL IMPROVEMENT	CONTINUING	SAVE LIVES AND PROPERTY

Section B

Space Flight Activity

Major Space "Firsts"

LAUNCH DATE	MISSION	EVENT DESCRIPTION	DATE	US	USSR
4 Oct 57	Sputnik 1	Man Made Earth Satellite	4 Oct 57		X
3 Nov 57	Sputnik 2	Biosatellite	3 Nov 57		X
1 Feb 58	Explorer	Discovered Radiation Belt (Van Allen)	1 Feb 58	X	
2 Jan 59	Luna 1	Escaped Earth's Gravity	2 Jan 59		X
17 Feb 59	Vanguard II	Earth Photo from Satellite	17 Feb 59	X	
12 Sep 59	Luna 2	Lunar Impact	14 Sep 59		X
4 Oct 59	Luna 3	Lunar Picture (Dark Side)	7 Oct 59		X
1 Apr 60	TIROS 1	Weather Satellite	1 Apr 60	X	
13 Apr 60	Transit 1B	Navigation Satellite	13 Apr 60	X	
12 Aug 60	ECHO-1	Communications Satellite	12 Aug 60	X	
19 Aug 60	Sputnik 5	Orbited Animals	20 Aug 60		X
12 Apr 61	Vostok 1	Manned Orbital Flight	12 Apr 61		X
26 Aug 62	Mariner 2	Interplanetary Probe - Venus Flyby	14 Dec 62	X	
1 Nov 62	Mars 1	Mars Flyby	Jun 63		X
16 Jun 63	Vostok 6	Female in Orbit	16 Jun 63		X
28 Nov 64	Mariner 4	Mars Flyby Pictures	15 Jul 65	X	
16 Nov 65	Venera 3	Venus Impact	1 Mar 66		X
31 Jan 66	Luna 9	Lunar Soft Landing	3 Feb 66		X
16 Mar 66	Gemini 8	Manned Docking of Two Craft	16 Mar 66	X	
31 Mar 66	Lunar 10	Lunar Orbiter	3 Apr 66		X
17 Apr 67	Surveyor 3	Lunar Surface Sampler	20 Apr 67	X	
14 Sep 68	Zond 5	Circumlunar of Live Animals	21 Sep 68		X
21 Dec 68	Apollo 8	Manned Lunar Orbit	24 Dec 68	X	
16 Jul 69	Apollo 11	Manned Lunar Landing	20 Jul 69	X	
16 Jul 69	Apollo 11	Lunar Soil Samples Returned	24 Jul 69	X	
17 Aug 70	Venera 7	Venus Soft Landing	15 Dec 70		X
19 May 71	Mars 2	Mars Impact	27 Nov 71		X
28 May 71	Mars 3	Mars Soft Landing	2 Dec 71		X
30 May 71	Mariner 9	Mars Orbit	13 Nov 71	X	
3 Mar 72	Pioneer 10	Jupiter Flyby	3 Dec 73	X	
3 Nov 73	Mariner 10	Mercury Flyby	16 Mar 74	X	
8 Jun 75	Venus 9	Venus Orbit	22 Oct 75		X
15 Jul 75	Apollo/Soyuz	Manned International Cooperative Mission - Rendezvous, Docking, and Transfer of Crews	17 Jul 75	X	X
20 Aug 75	Viking 1	Multiday Operation of	20 Jul 76	X	
9 Sep 75	Viking 2	Spacecraft on Surface of Another Planet	3 Sep 76	X	
	Vikings 1 & 2	In-situ analysis of surface material and biological experiments conducted on another planet (Mars)	20 Jul 76	X	
6 Apr 73	Pioneer 11	Saturn Flyby	Sep 79	X	
5 Sep 77	Voyager 1	High resolution photographs & measurements of Jupiter & Saturn	Mar 79	X	
20 Aug 77	Voyager 2		Nov 80	X	

NASA PLANNED FLIGHT SCHEDULE

MISSION	VEHICLE	SITE	1981 1Q	1981 2Q	1981 3Q	1981 4Q	1982 1H	1982 2H	1983	1984	1985
Space Shuttle			STS-1		2	3	4	5,6,7	8 thru 15	16 thru 30 (+1-Vandenberg)	31 thru 49 (+2 thru 6-Vandenberg)
Astrophysics											
SME	Delta	WTR				A					
IRAS**(NIVR)	Delta	WTR						A			
DE**(UK)	Delta	WTR			A/B						
SM**(Italy)	Scout	SM						A			
Earth Observations											
GOES*	Delta	ETR	E								
LANDSAT	Delta	WTR						D			
NOAA*	Atlas F	WTR		A		D		E		F	G
Communications											
Intelsat V*	A-Centaur	ETR	B	C	D	E					
FLTSATCOM*	A-Centaur	ETR		E							
SBS*	Delta	ETR	B								
Transat*(USN)	Scout	WTR		A		A		A	A	A	A
RCA*	Delta	ETR		D		C-1					
Comstar*	A-Centaur	ETR	D								
Westar*	Delta	ETR					A				

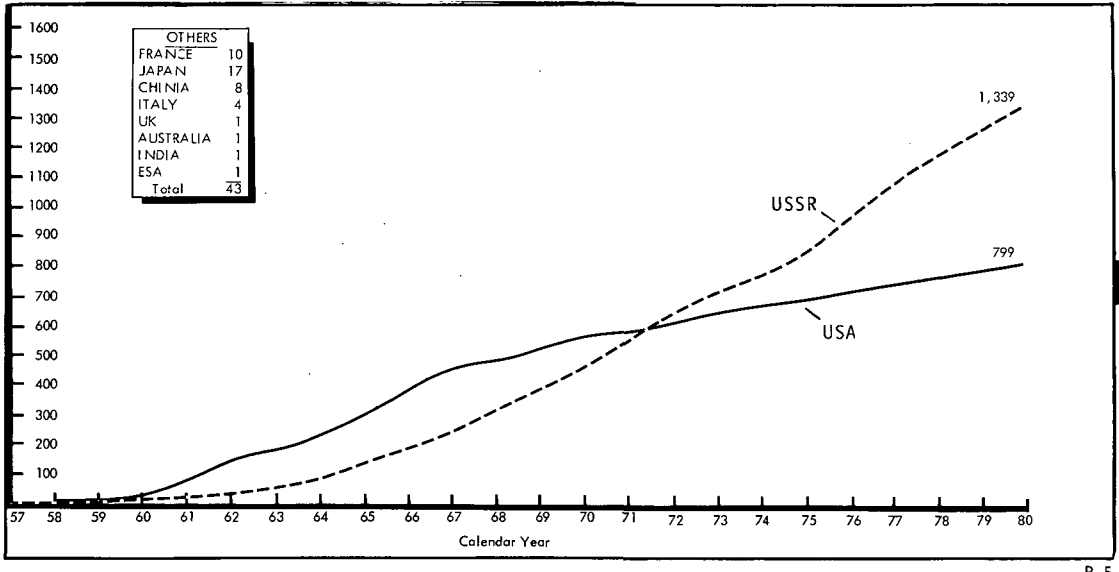
*Reimbursable
**Cooperative

DE - Dynamic Explorer
FLTSATCOM - Fleet Satellite Communications
GOES - Geostationary Operational Environmental Satellite
IRAS - Infrared Astronomy Satellite
SBS - Small Business Satellite
SM - San Marco
SME - Solar Mesosphere Explorer
SMM - Solar Maximum Mission

Summary Of USA & USSR Announced Launches

	Calendar Year																							
	NUMBER OF SUCCESSFUL LAUNCHES																							
	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	TOTAL
NASA	0	0	8	10	16	20	11	24	23	29	18	12	13	7	7	9	9	3	11	2	3	8	3	1	247
NASA/USA Gov't	0	0	0	0	0	0	2	1	1	4	3	3	1	1	1	2	2	1	2	3	2	2	3	3	37
NASA/Commercial	0	0	0	0	0	1	1	0	1	1	3	1	2	3	2	2	1	3	3	7	1	3	2	2	39
NASA/International	0	0	0	0	0	2	0	2	1	0	2	3	4	2	6	5	1	8	3	4	7	7	1	0	58
TOTAL NASA	0	0	8	10	16	23	14	27	26	34	26	19	20	13	16	18	13	15	19	16	13	20	9	6	381
Air Force	0	1	5	8	16	31	24	31	34	39	27	25	18	16	17	13	10	8	9	11	10	13	7	6	379
Navy	0	1	0	2	3	3	4	4	5	4	4	1	1	1	0	0	0	0	0	0	0	0	0	0	33
Army	0	3	0	1	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	6
TOTAL DOD	0	5	5	11	19	34	28	35	40	43	32	26	19	17	17	13	10	8	9	11	10	13	7	6	418
TOTAL USA SUCCESSES	0	5	13	21	35	57	42	62	66	77	58	45	39	30	33	31	23	23	28	27	23	33	16	12	799
TOTAL USSR	2	1	3	3	6	20	17	30	48	44	66	74	70	81	83	74	86	81	89	99	98	88	87	89	1339
	NUMBER OF UNSUCCESSFUL LAUNCHES (Not included in numbers above)																								
NASA	0	4	6	7	8	4	1	3	4	2	1	3	1	1	1	0	0	1	1	0	0	0	0	0	48
NASA/USA Gov't	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	3
NASA/USA Commercial	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	1	0	1	0	0	0	4
NASA/International	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	2	0	0	0	4
Total NASA Unsuccessful	0	4	6	7	8	4	1	3	4	2	2	4	2	1	2	0	1	2	2	0	3	0	0	1	59
Total DOD Unsuccessful	1	8	4	8	7	6	8	5	4	3	2	1	0	0	2	2	0	0	1	0	0	1	0	2	65

Successful USA & USSR Announced Launches

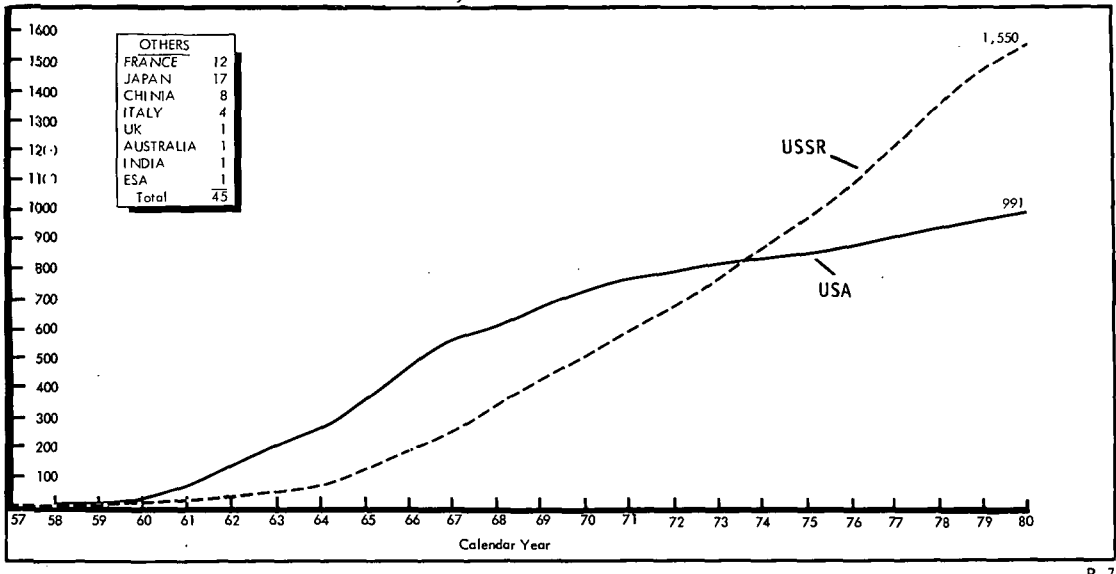


Summary Of USA & USSR Announced Payloads

	Calendar Year																							
	NUMBER OF SUCCESSFUL MISSIONS OR PAYLOADS																							
	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	TOTAL
NASA	0	0	8	9	15	17	10	23	22	19	17	13	11	5	7	9	8	3	11	2	3	8	3	1	224
NASA/USA Gov't	0	0	0	0	0	0	2	1	1	4	3	3	1	1	1	2	2	1	2	3	2	2	3	3	37
NASA/USA Commercial	0	0	0	0	0	1	1	0	1	0	3	1	2	2	2	2	1	3	3	7	1	3	1	2	36
NASA/International	0	0	0	0	0	2	0	2	2	0	2	3	4	2	6	5	1	9	3	4	8	7	1	0	61
TOTAL NASA	0	0	8	9	15	20	13	26	26	23	25	20	18	10	16	18	12	16	19	16	14	20	8	6	358
Air Force	0	1	5	8	18	33	39	39	49	63	48	42	29	20	31	17	12	7	11	18	14	14	9	9	536
Navy	0	1	0	3	7	7	10	11	15	4	12	1	10	1	0	0	0	1	0	0	0	0	0	0	83
Army	0	3	0	1	0	0	0	0	4	3	1	0	1	1	0	0	0	0	0	0	0	0	0	0	14
TOTAL DOD	0	5	5	12	25	40	49	50	68	70	61	43	40	22	31	17	12	8	11	18	14	14	9	9	a/ 633
TOTAL USA SUCCESSES	0	5	13	21	40	60	62	76	94	93	86	63	58	32	47	35	24	24	30	34	28	34	17	15	991
TOTAL USSR	2	1	3	3	6	20	17	35	64	44	66	74	70	88	97	89	107	95	111	121	105	120	102	110	1550
	NUMBER OF UNSUCCESSFUL MISSIONS OR PAYLOADS (Not included in numbers above)																							
NASA	0	4	6	8	9	7	2	5	5	7	2	3	3	3	1	0	0	1	1	0	0	0	0	0	67
NASA/USA Gov't	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	3
NASA/USA Commercial	0	0	0	0	0	0	0	0	0	1	0	1	1	1	0	0	0	0	1	0	1	0	1	0	7
NASA/International	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	2	0	0	0	4
Total NASA Unsuccessful	0	4	6	8	9	7	2	5	5	8	3	4	4	4	2	0	1	2	2	0	3	0	1	1	81
Total DOD Unsuccessful	1	8	4	8	7	6	8	5	4	3	2	1	0	0	2	2	0	0	1	0	0	2	0	4	68

a/ Subject to change as DOD payloads become unclassified

Successful USA & USSR Announced Payloads



Summary Of United States Manned Space Flight

MISSION	NO. OF ASTRONAUTS	MISSION DURATION	MAN-HOURS
MERCURY REDSTONE:			
MR-3 } Suborbital	1	0:15	0:15
MR-4 }	1	0:16	0:16
Total 2	2	0:31	0:31
MERCURY ATLAS:			
MA-6	1	4:55	4:55
MA-7	1	4:56	4:56
MA-8	1	9:13	9:13
MA-9	1	34:20	34:20
Total 4	4	53:24	53:24
GEMINI TITAN:			
GT-3	2	4:53	9:46
GT-4	2	97:56	195:52
GT-5	2	190:55	381:50
GT-7	2	330:35	661:10
GT-6A	2	25:51	51:42
GT-8	2	10:41	21:22
GT-9	2	72:21	144:42
GT-10	2	70:47	141:34
GT-11	2	71:17	142:34
GT-12	2	94:35	189:10
Total 10	20	969:51	1939:42
APOLLO SATURN I:			
7	3	260:09	780:27
Total 1	3	260:09	780:27

MISSION	NO. OF ASTRONAUTS	MISSION DURATION	MAN-HOURS
APOLLO SATURN V:			
8	3	147:01	441:03
9	3	241:01	723:03
10	3	192:03	576:09
11	3	195:19	585:57
12	3	244:36	733:48
13	3	142:55	428:45
14	3	216:02	648:06
15	3	295:12	885:36
16	3	265:51	797:33
17	3	301:52	905:36
Total 10	30	2241:52	6725:36
SKYLAB SL-1 SATURN V:			
SL-2 - Saturn IB	3	672:50	2018:30
SL-3 - Saturn IB	3	1427:09	4281:27
SL-4 - Saturn IB	3	2017:16	6051:48
Total 3	9	4117:15	12,351:45
APOLLO SATURN IB:			
ASTP	3	217:28	652:24
Total 1	3	217:28	652:24
USA TOTAL			
31	71	7860:30	22,503:49

Summary Of Soviet Union Manned Space Flight

MISSION	NO. OF COSMONAUTS	MISSION DURATION	MAN-HOURS
VOSTOK:			HRS., MINS.
1	1	1:48	1:48
2	1	25:18	25:18
3	1	94:25	94:25
4	1	70:59	70:59
5	1	119:06	119:06
6	1	70:50	70:50
Total 6	6	382:26	382:26
VOSKHOD:			
1	3	24:17	72:51
2	2	26:02	52:04
Total 2	5	50:19	124:55
SOYUZ:			
1	1	26:37	26:37
3	1	94:51	94:51
*4	1	71:23	71:23
	2		95:38
*5	1	72:56	72:56
6	2	118:42	237:24
7	3	118:41	356:03
8	2	118:50	237:40
9	2	424:59	849:58
10	3	47:46	143:18
11	3	570:22	1711:06
12	2	47:16	94:32
13	2	188:55	377:50
14	2	377:30	755:00
15	2	48:12	96:24
16	2	142:24	284:48
17	2	709:20	1418:40
Aborted Before Orbit	2	:20	:40
18	2	1511:20	3022:40
19 (ASTP)	2	142:31	285:02
21	2	1182:24	2364:48
22	2	189:54	379:48
23	2	48:06	96:12
24	2	425:23	850:46
25	2	48:46	97:32
*26	2	2314:00	4628:00
*27	2	142:59	285:58
28	2	190:17	380:34
*29	2	3350:48	6701:36
30	2	190:04	380:08
*31	2	188:49	377:38
*32	2	4200:36	8401:12
33	2	47:01	94:02
*35	2	4436:12	8872:24
*36	2	188:46	377:32
T-2	2	94:41	189:22
*37	2	188:42	377:24
*38	2	188:43	377:26
T-3	3	307:08	921:24
Total 38	78	22,756:10	46,386:16
USSR Total 46	89	23,188:55	46,893:37

*Crews exchanged spacecraft for re-entry

NASA Record Of Performance (Scout & Larger Vehicles)

LAUNCH VEHICLE PERFORMANCE

VEHICLE	TOTAL	SUCCESSES	%SUCCESS
Mercury (Blue) Scout	1	0	0
Juno II	10	4	40
Jupiter C	1	0	0 1/
Thor-Able	5	3	60
Vanguard	4	1	25
Atlas-Able	3	0	0
Atlas 2/	11	9	82
Thor	2	2	100
Little Joe	7	7	100
Little Joe II	5	4	80
Scout X	1	0	0
Scout	75	68	91
Redstone	5	5	100
Thor-Delta (Incl. TAD)	153	141	92
Thor-Agena (Incl. TAT)	13	12	92
Atlas-Agena & F	30	23	77
Atlas-Centaur	54	46	85
Saturn I	10	10	100
Titan II	12	12	100
Titan III C	1	1	100
Titan III E Centaur	7	6	86
Atlas X-259	2	2	100
Gemini (A-A Target)	6	4	67
Saturn IB	9	9	100
Saturn V	13	12	92
TOTAL	440	381	87

Includes all launches (Little Joes, Scouts, and larger), funded by NASA or for which NASA has vehicle performance responsibility, including vehicle development missions.

1979 TOTAL VEHICLE LAUNCH RECORD

	ATTEMPTS	SUCCESSES	% SUCCESS
Atlas Centaur	2	2	100
Atlas-F	1	1	100
Delta	3	3	100
Scout	3	3	100
TOTAL	9	9	100

1980 TOTAL VEHICLE LAUNCH RECORD

Atlas Centaur	3	3	100
Atlas-F	1	0	0
Delta	3	3	100
Scout	--	--	--
TOTAL	7	6	86

1/ Does not include three successful launches of Jupiter C made prior to creation of NASA by projects transferred to NASA in October 1958.
2/ Includes Atlas vehicle for the Gemini ATDA.

NASA Major Launch Record

MISSION		DATE (GMT)		PERIOD	ORBITAL PARAMETERS			WEIGHT	MISSION/REMARKS
Name/Desig.	Vehicle	Launch	Down	(mins.)	Apogee (km)	Perigee	Incl.°	(kg)	(All launches from ETR, unless othewise noted.)
FLTSATCOM-C 1980 4A	A-Centaur	17 Jan		GEOSYNCHRONOUS ORBIT				1865	Fleet Satellite Communications to provide communications for the USAF and USN - Reimbursable
SMM-A 1980 14A	Delta	14 Feb		96	571	562	28.5	2315	Solar Maximum Mission to study the solar activity during the maximum of solar flares and related phenomena.
NOAA-7 1980 043A	Atlas-F	29 May		101	1434	267	92.2	1405	Meteorological Satellite for NOAA - Vehicle failed to place payload into proper orbit - WTR - Reimbursable
GOES-D 1980 074A	Delta	9 Sep		GEOSYNCHRONOUS ORBIT				832	Geostationary Operational Environmental Satellite for NOAA - Reimbursable
FLTSATCOM-D 1980 087A	A-Centaur	31 Oct		GEOSYNCHRONOUS ORBIT				1876	Fleet Satellite Communications to provide communications for the USAF and USN - Reimbursable
SBS-A 1980 091A	Delta	15 Nov		GEOSYNCHRONOUS ORBIT				1057	Satellite Business Systems (SBS) - Domestic Communications Satellite - Reimbursable
INTELSAT V-A 1980 098A	A-Centaur	6 Dec		GEOSYNCHRONOUS ORBIT				1928	Comsat Communications Satellite - Reimbursable

Total NASA Performance By Major Program Activity

(Excludes Reimbursables, Cooperatives and Small Piggybacks)

PROGRAM	VEHICLE SUCCESS/ ATTEMPTS	VEHICLE % SUCCESS	MISSION SUCCESS/ ATTEMPTS	MISSION % SUCCESS
Mercury	20/23	87%	18/23	78%
Gemini*	17/19	89%	10/14	71%
Apollo (Includes ASTP)	28/30	93%	27/30	90%
Workshop (Skylab) and Manned Visits	4/4	100%	3/3	100%
MANNED SPACE TOTAL	69/76	91%	58/70	83%
Geoprobes	4/4	100%	4/4	100%
Orbital Flights	60/75	80%	59/77	77%
Physics and Astronomy	64/79	81%	63/81	77%
Lunar Probes	19/28	68%	14/28	50%
Planetary and Deep Space	20/24	83%	20/24	83%
Lunar and Planetary	39/52	75%	34/52	65%
Bioscience	4/4	100%	2/4	50%
Launch Vehicle Development	8/13	62%	8/13	62%
SPACE SCIENCE TOTAL	115/148	78%	107/150	71%
Communications	13/16	81%	11/16	69%
Earth Observations	24/25	96%	24/25	96%
Special Applications	5/5	100%	5/5	100%
Applications Explorers	3/3	100%	3/3	100%
APPLICATIONS TOTAL	45/49	92%	43/49	87%
Suborbital	11/13	85%	10/13	77%
Orbital	7/9	78%	6/9	67%
SPACE TECHNOLOGY TOTAL	18/22	82%	16/22	73%
TOTAL NASA MISSIONS	247/295	84%	224/291	77%

*Does not include target vehicles

NASA REIMBURSABLE & COOPERATIVE LAUNCHES

(1958 - 1980)

COMMERCIAL

COMSAT	34
AT&T	2
WESTERN UNION	3
RCA	3
SBS	1
TOTAL (ALL REIMBURSABLE)	43

INTERNATIONAL

REIMBURSABLE LAUNCHES	34
COOPERATIVE LAUNCHES	28
TOTAL	62

U.S. GOVERNMENT

DOD	13
AEC	2
NRL	3
ESSA	9
NOAA	13
TOTAL (INCLUDES 3 COOPERATIVES)	40

SUMMARY

COMMERCIAL	43
INTERNATIONAL	62
U.S. GOVERNMENT	40
TOTAL (114 REIMBURSABLES & 31 COOPERATIVES)	145

NASA/USA Government Cooperative & Reimbursable Launches

AGENCY/SPACECRAFT	LAUNCH VEHICLE	LAUNCH DATE (GMT)
Atomic Energy Commission		
RFD-1 (Re-entry Test)	Scout	22 May 63
RFD-2 (Re-entry Test)	Scout	9 Oct 64
Naval Research Lab		
*Explorer XXX (Solar Physics)	Scout	19 Nov 65
*Explorer XXXVII (Solar Physics)	Scout	5 Mar 68
*Explorer 44 (Solar Physics)	Scout	8 Jul 71
Department of Defense		
CRL (USAF) (Geophysics)	Scout	28 Jun 63
OV-3 (USAF) (Radiation Research)	Scout	9 Jun 66
TRANSIT (USN)	Scout	2 Sep 72
TRANSIT (USN)	Scout	29 Oct 73
TRANSIT (USN)	Scout	12 Oct 75
USAF Test (Comm. Research)	Scout	22 May 76
TRANSIT (USN)	Scout	1 Sep 76
TRANSAT (USN)	Scout	28 Oct 77
FLTSATCOM A	A-Centaur	9 Feb 78
SCATHA	Delta	30 Jan 79
FLTSATCOM B	A-Centaur	4 May 79
FLTSATCOM C	A-Centaur	17 Jan 80
FLTSATCOM D	A-Centaur	31 Oct 80

Total Reimbursables.....37
Total Cooperatives..... 3
Total Launches.....40
Total Successful.....37

*Cooperatives
1/ Vehicle Failure

AGENCY/SPACECRAFT	LAUNCH VEHICLE	LAUNCH DATE (GMT)
Environmental Science Services Agency		
ESSA I (OT-3)	Thor-Delta	3 Feb 66
ESSA II (OT-2)	Thor-Delta	28 Feb 66
ESSA III (TOS-A)	Thor-Delta	2 Oct 66
ESSA IV (TOS-B)	Thor-Delta	26 Jan 67
ESSA V (TOS-C)	Thor-Delta	20 Apr 67
ESSA VI (TOS-D)	Thor-Delta	10 Nov 67
ESSA VII (TOS-E)	Thor-Delta	16 Aug 68
ESSA VIII (TOS-F)	Thor-Delta	15 Dec 68
ESSA IX (TOS-G)	Thor-Delta	26 Feb 69
National Oceanic & Atmospheric Agency		
ITOS-A (NOAA-1)	Thor-Delta	11 Dec 70
ITOS-B (NOAA)	Thor-Delta 1/	21 Oct 71
ITOS-D (NOAA-2)	Thor-Delta	15 Oct 72
ITOS-E (NOAA)	Thor-Delta 1/	16 Jul 73
ITOS-F (NOAA-3)	Thor-Delta	6 Nov 73
ITOS-G (NOAA-4)	Delta	15 Nov 74
SMS-C (GOES-1) (NOAA)	Delta	16 Oct 75
ITOS-H (NOAA-5)	Delta	29 Jul 76
GOES-2 (NOAA)	Delta	16 Jun 77
GOES-3 (NOAA)	Delta	16 Jun 78
NOAA-6	Atlas-F	27 Jun 79
NOAA-7	Atlas-F 1/	29 May 80
GOES-4 (NOAA)	Delta	9 Sep 80

NASA/USA Commercial Reimbursable Launches

SPACECRAFT	LAUNCH VEHICLE	LAUNCH DATE (GMT)
AT&T		
Telstar	Thor-Delta	10 Jul 62
Telstar	Thor-Delta	7 May 63
COMSAT		
Intelsat I F-1	Delta	6 Apr 65
Intelsat II F-1 2/	Delta	26 Oct 66
Intelsat II F-2	Delta	11 Jan 67
Intelsat II F-3	Delta	23 Mar 67
Intelsat II F-4	Delta	28 Sep 67
Intelsat III F-1	Delta 1/	19 Sep 68
Intelsat III F-2	Delta	19 Dec 68
Intelsat III F-3	Delta	6 Feb 69
Intelsat III F-4	Delta	22 May 69
Intelsat III F-5	Delta 1/	26 Jul 69
Intelsat III F-6	Delta	15 Jan 70
Intelsat III F-7	Delta	23 Apr 70
Intelsat III F-8 2/	Delta	23 Jul 70
Intelsat IV F-2	A-Centaur	25 Jan 71
Intelsat IV F-3	A-Centaur	19 Dec 71
Intelsat IV F-4	A-Centaur	22 Jan 72
Intelsat IV F-5	A-Centaur	13 Jun 72
Intelsat IV F-7	A-Centaur	23 Aug 73
Intelsat IV F-8	A-Centaur	21 Nov 74
Intelsat IV F-6	A-Centaur 1/	20 Feb 75
Intelsat IV F-1	A-Centaur	22 May 75
Intelsat IVA F-1	A-Centaur	25 Sep 75
Intelsat IVA F-2	A-Centaur	29 Jan 76
Comstar-A	Delta	22 Apr 76
Comstar-B	Delta	22 Jul 76
Marisat-A	Delta	19 Feb 76
Marisat-B	Delta	9 Jun 76
Marisat-C	Delta	14 Oct 76
Intelsat IVA F-4	A-Centaur	26 May 77
Intelsat IVA-F-5	A-Centaur 1/	29 Sep 77
Intelsat IVA-F-3	A-Centaur	7 Jan 78
Intelsat IVA-F-6	A-Centaur	31 Mar 78
Comstar D-3	A-Centaur	29 Jun 78
Intelsat V-A	A-Centaur	6 Dec 80
Western Union		
Westar A	Delta	13 Apr 74
Westar B	Delta	10 Oct 74
Westar C	Delta	9 Aug 79
RCA		
RCA-A	Delta	12 Dec 75
RCA-B	Delta	26 Mar 76
RCA-C 2/	Delta	6 Dec 79
SBS		
SBS-A	Delta	15 Nov 80

1/ VEHICLE FAILURE
2/ SPACECRAFT FAILURE

Total Launches.....43
Total Successful Launches 39
Total Successful Payloads 36

NASA/International Cooperative & Reimbursable Launches

(SCOUT AND LARGER VEHICLES)

YEAR	SPACECRAFT TITLE	LAUNCH VEHICLE	LAUNCH DATE(GMT)
1962	ARIEL-I (United Kingdom)	DELTA	26 Apr
	ALOUETTE -I (Canada)	THOR-AGENA-B	29 Sep
1964	ARIEL-II (United Kingdom)	SCOUT	27 Mar
	SAN MARCO-I (Italy)	SCOUT	15 Dec
1965	ALOUETTE - II (Canada) (Piggyback on Explorer XXXI)	NA	29 Nov
	FRENCH IA (France)	SCOUT	6 Dec
1967	SAN MARCO 2 (Italy)	SCOUT	26 Apr
	ARIEL-III (United Kingdom)	SCOUT	5 May
	ESRO-IIA	SCOUT 1/	29 May
1968	ESRO-IIB (IRIS)	SCOUT	17 May
	ESRO-IA (Aurorae)	SCOUT	3 Oct
	*ESRO (HEOS-A)	DELTA	5 Dec
1969	ISIS-I (Canada)	DELTA	30 Jan
	*ESRO-IB (Boreas)	SCOUT	1 Oct
	AZUR-I (German) (GRS-A)	SCOUT	8 Nov
	SKYNET-I (United Kingdom)	DELTA	22 Nov
1970	*SKYNET-2 (United Kingdom)	DELTA	19 Aug
	*NATO-A (NATOSAT-I)	DELTA	20 Mar
1971	*NATO-B (NATOSAT-II)	DELTA	2 Feb
	ISIS-B (Canada)	DELTA	31 Mar
	SAN MARCO (C) (Italy)	SCOUT	24 Apr
	CAS/EOLE-A (France)	SCOUT	16 Aug
	BARIUM ION CLOUD (Germany)	SCOUT	20 Sep
	UK-4 (United Kingdom)	SCOUT	11 Dec
1972	*ESRO (HEOS A-2)	DELTA	31 Jan
	*ESRO (TD-1)	DELTA	12 Mar
	*TELESAT-A (ANIK-1) (Canada)	DELTA	9 Nov
	*ESRO-IV	SCOUT	21 Nov
	German A-2 (AEROS)	SCOUT	16 Dec
1973	*TELESAT B (ANIK-2) (Canada)	DELTA	20 Apr
1974	* SKYNET II A (United Kingdom)	DELTA 1/	19 Jan
	SAN MARCO C-2 (Italy)	SCOUT	18 Feb
	*UK-X4 (United Kingdom)	SCOUT	8 Mar
	*AEROS-B (Germany)	SCOUT	16 Jul
	ANS-A (Netherlands)	SCOUT	30 Aug
	UK-5/AERIEL 5 (United Kingdom)	SCOUT	15 Oct
	INTASAT (Spain-Piggyback on ITOS-G)	NA	15 Nov
	* SKYNET II-B (United Kingdom)	DELTA	22 Nov
	HELIOS-A (Germany)	TITAN III E CENTAUR	10 Dec
	*SYMPHONIE-A (France-Germany)	DELTA	18 Dec

1/ Vehicle failure *Reimbursable Launches

NASA/International Cooperative & Reimbursable Launches

(SCOUT AND LARGER VEHICLES)

YEAR	SPACECRAFT TITLE	LAUNCH VEHICLE	LAUNCH DATE (GMT)
1975	*TELESAT C (Canada)	Delta	7 May
	*COS-B (ESA)	Delta	8 Aug
	*SYMPHONIE-B (France-Germany)	Delta	26 Aug
1976	Helios-B (Germany)	T-III-Centaur	15 Jan
	CAS-CTS (Canada)	Delta	17 Jan
	*NATO III-A	Delta	22 Apr
	*Palapa-A (Indonesia)	A-Centaur	13 May
1977	*NATO III-B	Delta	27 Jan
	*Palapa-B (Indonesia)	Delta	10 Mar
	*GEOS (ESA)	Delta 1/	20 Apr
	*GMS (Japan)	Delta	14 Jul
	*SIRIO (Italy)	Delta	25 Aug
	*OTS (ESA)	Delta 1/	13 Sep
	ISEE A/B (ESA-Dual Payload)	Delta	22 Oct
	*METEOSAT (ESA)	Delta	22 Nov
	*CS (Japan)	Delta	14 Dec
1978	IUE-A (ESA)	Delta	26 Jan
	*BSE (Japan)	Delta	7 Apr
	*OTS-B (ESA)	Delta	11 May
	*GEOS-B (ESA)	Delta	14 Jul
	ISEE-C (ESA)	Delta	12 Aug
	*NATO-III C	Delta	19 Nov
	*Telesat (Canada)	Delta	16 Dec
1979	*UK-6 (United Kingdom)	Scout	2 Jun 79

*Reimbursable Launches 1/ Vehicle Failure

Total Cooperatives	28
Total Reimbursables	34
Total Launches	62
Total Successful Launches	58
Total Successful Payloads	61 a/

a/ Includes 1 Dual Payload & 2 Piggybacks

Summary Of Manned Space Flight Mission Performance

By Program Activities

MISSION	LAUNCH		ASSESSMENT	
	DATE	VEHICLE	VEHICLE	MISSION
MERCURY PROGRAM				
Suborbital Flights				
Big Joe	9 Sep 59	Atlas	S	S
Little Joe-1 - Vehicle Test	4 Oct 59	Little Joe-6	S	S
Little Joe-2	4 Nov 59	Little Joe-1A	S	S
Little Joe-3	4 Dec 59	Little Joe-2	S	S
Little Joe-4	21 Jan 60	Little Joe-1B	S	S
Mercury (MA-1)	29 Jul 60	Atlas	U	U
Little Joe-5	8 Nov 60	Little Joe-5	S	U
Mercury (MR-1A)	19 Dec 60	Redstone	S	S
Mercury (MR-2)	31 Jan 61	Redstone	S	S
Mercury (MA-2)	21 Feb 61	Atlas	S	S
Little Joe-5A	18 Mar 61	Little Joe-5A	S	U
Mercury (MR-BD) - Vehicle Test	24 Mar 61	Redstone	S	S
Little Joe-5B	28 Apr 61	Little Joe-5B*	S	S
Freedom 7- (MR-3) (Manned)	5 May 61	Redstone	S	S
Liberty Bell-7 (MR-4) (Manned)	21 Jul 61	Redstone	S	S
TOTAL (Success/Attempts)			14/15	12/15
Orbital Flights				
Mercury (MA-3)	25Apr 61	Atlas	U	U
Mercury (MA-4)	13 Sep 61	Atlas	S	S
Mercury (MS-1)	1 Nov 61	(Mercury Blue Scout)	U	U
Mercury (MA-5)	29 Nov 61	Atlas	S	S
Friendship 7 (MA-6) (Manned)	20 Feb 62	Atlas	S	S
Aurora 7 (MA-7) (Manned)	24 May 62	Atlas	S	S
Sigma 7 (MA-8) (Manned)	3 Oct 62	Atlas	S	S
Faith 7 (MA-9) (Manned)	15 May 63	Atlas	S	S
TOTAL (Success/Attempts)			6/8	6/8

Summary Of Manned Space Flight Mission Performance

By Program Activities

MISSION	LAUNCH		ASSESSMENT	
	DATE	VEHICLE	VEHICLE	MISSION
GEMINI PROGRAM (Suborbital Flights)				
Gemini II	19 Jan 65	Titan II	S	S
TOTAL (Success/Attempts)			1/1	1/1
Orbital Flights				
Gemini I	8 Apr 64	Titan II	S	S
Gemini III (Manned)	23 Mar 65	Titan II	S	S
Gemini IV (Manned)	3 Jun 65	Titan II	S	S
Gemini V (Manned)	21 Aug 65	Titan II	S	S
Gemini VI	25 Oct 65	Atlas-Agena	U	U
Gemini VII (Manned)	4 Dec 65	Titan II	S	S
Gemini VI-A (Manned)	15 Dec 65	Titan II	S	S
Gemini VIII (Manned)	16 Mar 66	Atlas-Agena/Titan II	S/S	U
Gemini IX	17 May 66	Atlas-Agena	U	U
Gemini IX-A (Manned)	1 Jun/3 Jun 66	Atlas/Titan II	S/S	U
Gemini X (Manned)	18 Jul 66	Atlas-Agena/Titan II	S/S	S
Gemini XI (Manned)	12 Sep 66	Atlas-Agena/Titan II	S/S	S
Gemini XII (Manned)	11 Nov 66	Atlas-Agena/Titan II	S/S	S
TOTAL (Success/Attempts)			16/18	9/13
APOLLO PROGRAM (Suborbital Flights)				
Saturn Test (SA-1)	27 Oct 61	*Saturn I	S	S
Saturn (SA-2)	25 Apr 62	*Saturn I	S	S
Saturn (SA-3)	16 Nov 62	*Saturn I	S	S
Saturn (SA-4)	28 Mar 63	*Saturn I	S	S
Little Joe II #1	28 Aug 63	*Little Joe II	S	S
Apollo Transonic Abort	13 May 64	*Little Joe II	S	S
Apollo Max Q Abort	8 Dec 64	*Little Joe II	S	S
High Altitude Abort	19 May 65	*Little Joe II	U	U
Intermediate Altitude Abort	20 Jan 66	*Little Joe II #5	S	S
Saturn (AS-201)	26 Feb 66	*Uprated Saturn I	S	S
Saturn (AS-202)	25 Aug 66	*Uprated Saturn I	S	S
TOTAL (Success/Attempts)			10/11	10/11

*Launch Vehicle Development

Summary Of Manned Space Flight Mission Performance

By Program Activities

MISSION	LAUNCH		ASSESSMENT	
	DATE	VEHICLE	VEHICLE	MISSION
APOLLO PROGRAM (Cont'd)				
Orbital Flights				
Saturn (SA-5)	29 Jan 64	*Saturn I	S	S
Saturn (SA-6)	28 May 64	*Saturn I	S	S
Saturn (SA-7)	18 Sep 64	*Saturn I	S	S
Saturn (AS-203)	5 Jul 66	*Uprated Saturn I	S	S
Apollo 4 (501/017)	9 Nov 67	*Saturn V	S	S
Apollo 5 (204/LM-1)	22 Jan 68	Saturn IB	S	S
Apollo 6 (502/CSM-020/LTA-2R)	4 Apr 68	*Saturn V	U	U
Apollo 7 (205/CSM-101) (Manned)	11 Oct 68	Saturn IB	S	S
Apollo 8 (503/CSM-103/LTA-B) (Manned)	21 Dec 68	Saturn V	S	S
Apollo 9 (504/CSM-104/LM-3) (Manned)	3 Mar 69	Saturn V	S	S
Apollo 10 (505/CSM-106/LM-4) (Manned)	18 May 69	Saturn V	S	S
Apollo 11 (506/CSM-107/LM-5) (Manned)	16 Jul 69	Saturn V	S	S
Apollo 12 (507/CSM-108/LM-6) (Manned)	14 Nov 69	Saturn V	S	S
Apollo 13 (508/CSM-109/LM-7) (Manned)	11 Apr 70	Saturn V	S	U
Apollo 14 (509/CSM-110/LM-8) (Manned)	31 Jan 71	Saturn V	S	S
Apollo 15 (510/CSM-112/LM-10) (Manned)	26 Jul 71	Saturn V	S	S
Apollo 16 (511/CSM-113/LM-11) (Manned)	16 Apr 72	Saturn V	S	S
Apollo 17 (512/CSM-114/LM-12) (Manned)	7 Dec 72	Saturn V	S	S
Apollo (ASTP)	15 Jul 75	Saturn IB	S	S
TOTAL (Success/Attempts)			18/19	17/19
SKYLAB PROGRAM				
Workshop SL-1 (513/S-IVB 212)	14 May 73	Saturn V	S	S
First Manned Visit SL-2 (206/CSM-116)	25 May 73	Saturn IB	S	
Second Manned Visit SL-3 (207/CSM-117)	28 Jul 73	Saturn IB	S	S
Third Manned Visit SL-4 (208/CSM-118)	16 Nov 73	Saturn IB	S	S
TOTAL (Success/Attempts)			4/4	3/3

*Launch Vehicle Development

Summary Of Space Science Flight Mission Performance

By Program Activities

MISSION	LAUNCH		ASSESSMENT	
	DATE	VEHICLE	VEHICLE	MISSION
BIOSCIENCE - ORBITAL FLIGHTS				
Biosatellite I (A)	14 Dec 66	Thor-Delta	S	U
Biosatellite II (B)	7 Sep 67	Thor-Delta	S	S
Biosatellite III (D)	29 Jun 69	Thor-Delta	S	U
OFO-I (A)	9 Nov 70	Scout	S	S
TOTAL (Success/Attempts)			4/4	2/4
LAUNCH VEHICLE DEVELOPMENT				
Sub-Orbital Flights				
Scout X	18 Apr 60	Scout X	U	U
Scout	1 Jul 60	Scout	S	S
Scout	4 Oct 60	Scout	S	S
Centaur Test (AC-1)	8 May 62	Atlas-Centaur	U	U
Centaur (AC-3)	30 Jun 64	Atlas-Centaur	S	S
Centaur (AC-4)	11 Dec 64	Atlas-Centaur	S	S
TOTAL (Success/Attempts)			4/6	4/6
Orbital Flights				
Centaur (AC-2)	27 Nov 63	Atlas-Centaur	S	S
Centaur (AC-5)	2 Mar 65	Atlas-Centaur	U	U
Scout Evaluation Vehicle A	10 Aug 65	Scout	S	S
Centaur (AC-6)	11 Aug 65	Atlas-Centaur	S	S
Centaur (AC-8)	8 Apr 66	Atlas-Centaur	U	U
Centaur (AC-9)	26 Oct 66	Atlas-Centaur	S	S
Centaur Proof Flight	11 Feb 74	Titan III E-Centaur	U	U
TOTAL (Success/Attempts)			4/7	4/7

Summary Of Space Science Flight Mission Performance

By Program Activities

MISSION	LAUNCH DATE	LAUNCH VEHICLE	ASSESSMENT VEHICLE	ASSESSMENT MISSION
PHYSICS AND ASTRONOMY				
Geoprobes				
Explorer 10 (P-14) (Atmosphere Physics)	25 Mar 61	Thor-Delta	S	S
Probe A (P-21) (Scientific Geoprobe)	19 Oct 61	Scout	S	S
P-21a (Scientific Geoprobe)	29 Mar 62	Scout	S	S
Gravity Probe (Gravity Measurements)	18 Jul 76	Scout	S	S
TOTAL (Success/Attempts)			4/4	4/4
Orbital Flights				
Beacon 1 (Atmosphere Physics)	23 Oct 58	Jupiter C	U	U
Beacon 2 (Atmosphere Physics)	14 Aug 59	Juno II	U	U
Beacon A (S-66) (Atmosphere Physics)	19 Mar 64	Thor-Delta	U	U
TOTAL (Success/Attempts)			0/3	0/3
Vanguard II (Meteorology)	17 Feb 59	Vanguard (SLV-4)	U	U
Vanguard (Atmosphere Physics)	13 Apr 59	Vanguard (SLV-5)	U	U
Vanguard (Solar-Earth Heating)	22 Jun 59	Vanguard (SLV-6)	U	U
Vanguard III (Magnetic Fields)	18 Sep 59	Vanguard (SLV-7)	S	S
TOTAL (Success/Attempts)			1/4	1/4
Explorer (S-1) (Energetic Particles)	16 Jul 59	Juno II	U	U
Explorer 6 (S-2) (Meteorology)	7 Aug 59	Thor-Able	S	S
Explorer 7 (S-1a) (Energetic Particles)	13 Oct 59	Juno II	S	S
Explorer (S-46) (Energetic Particles)	23 Mar 60	Juno II	U	U
Explorer 8 (S-30) (Atmosphere Physics)	3 Nov 60	Juno II	S	S
Explorer (S-56) Atmosphere Physics)	4 Dec 60	Scout	U	U
Explorer 9 (S-56a) (Atmosphere Physics)	16 Feb 61	Scout	S	S
Explorer (S-45) (Atmosphere Physics)	24 Feb 61	Juno II	U	U
Explorer 11 (S-15) (Gamma-ray Astronomy)	27 Apr 61	Juno II	S	S
Explorer (S-45a) (Atmosphere Physics)	24 May 61	Juno II	U	U

Summary Of

Space Science

Flight Mission Performance

By Program Activities

MISSION	LAUNCH		ASSESSMENT	
	DATE	VEHICLE	VEHICLE	MISSION
PHYSICS AND ASTRONOMY (Cont'd)				
Orbital Flights (Cont'd)				
Explorer 12 (S-3) (Atmosphere Physics)	16 Aug 61	Thor-Delta	S	S
Explorer 14 (S-3a) (Atmosphere Physics)	2 Oct 62	Thor-Delta	S	S
Explorer 15 (S-3b) (Atmosphere Physics)	27 Oct 62	Thor-Delta	S	S
Explorer 17 (S-6) (Aeronomy)	2 Apr 63	Thor-Delta	S	S
Explorer 18 (IMP-A)	26 Nov 63	Thor-Delta	S	S
Explorer 19 (AD-A) (Atmonphere Physics)	19 Dec 63	Scout	S	S
Explorer 20 (S-48) (Atmosphere Physics)	25 Aug 64	Scout	S	S
Explorer 21 (IMP-B)	4 Oct 64	Thor-Delta	U	U
Explorer 22 (BE-B) (Geodesy)	10 Oct 64	Scout	S	S
Explorer 24 (Air Density) } Dual Mission	21 Nov 64	Scout	S	S
Explorer 25 (Injun B) } Dual Mission			-	S
Explorer 26 (S-3C) (Atmosphere Physics)	21 Dec 64	Thor-Delta	S	S
Explorer 27 (BE-C) (Geodesy)	29 Apr 65	Scout	S	S
Explorer 28 (IMP-C)	29 May 65	Thor-Delta	S	S
Explorer 29 (GEOS)	6 Nov 65	Thor-Delta	S	S
Explorer 31 (DME-A)	29 Nov 65	Thor-Delta	S	S
Explorer 32 (AE-B)	25 May 66	Thor-Delta	S	S
Explorer 33 (IMP-D)	1 Jul 66	Thor-Delta	S	S
Explorer 34 (IMP-F)	24 May 67	Thor-Delta	S	S
Explorer 35 (IMP-E)	19 Jul 67	Thor-Delta	S	S
Explorer 38 (RAE-A)	4 Jul 68	Thor-Delta	S	S
Explorer 39 (Air Density) } Dual Mission	8 Aug 68	Scout	S	S
Explorer 40 (Injun V) } Dual Mission			-	S
Explorer 41 (IMP-G)	21 Jun 69	Thor-Delta	S	S
Explorer 42 (SAS-A)	12 Dec 70	Scout	S	S
Explorer 43 (IMP-I)	13 Mar 71	Delta	S	S

Summary Of Space Science Flight Mission Performance

By Program Activities

MISSION	LAUNCH DATE	LAUNCH VEHICLE	ASSESSMENT VEHICLE	ASSESSMENT MISSION
PHYSICS AND ASTRONOMY (Cont'd)				
Orbital Flights (Cont'd)				
Explorer 45 (SSS-A)	15 Nov 71	Scout	S	S
Explorer 47 (IMP-H)	22 Sep 72	Delta	S	S
Explorer 48 (SAS-B)	15 Nov 72	Scout	S	S
Explorer 49 (RAE-B)	10 Jun 73	Delta	S	S
Explorer 50 (IMP-J)	25 Oct 73	Delta	S	S
Explorer 51 (AE-C)	16 Dec 73	Delta	S	S
Explorer 52 (Hawkeye-1)	3 Jun 74	Scout	S	S
Explorer 53 (SAS-C)	7 May 75	Scout	S	S
Explorer 54 (AE-D)	6 Oct 75	Delta	S	S
Explorer 55 (AE-E)	19 Nov 75	Delta	S	S
Explorer (DAD-A/B)	5 Dec 75	Scout	U	U
TOTAL (Success/Attempts)			38/45	40/47
HIGH ENERGY ASTRONOMY OBSERVATORY				
HEAO-A	12 Aug 77	A-Centaur	S	S
HEAO-B	13 Nov 78	A-Centaur	S	S
HEAO-C	20 Sep 79	A-Centaur	S	S
TOTAL (Successful/Attempts)			3/3	3/3
SOLAR MAXIMUM MISSION				
SMM-A	14 Feb 80	Delta	S	S
TOTAL (Successful/Attempts)			1/1	1/1

Summary Of

Space Science

Flight Mission Performance

By Program Activities

MISSION	LAUNCH		ASSESSMENT	
	DATE	VEHICLE	VEHICLE	MISSION
PHYSICS AND ASTRONOMY (Cont'd)				
Orbiting Geophysical Observatory				
OGO-I (A) (EGO)	5 Sep 64	Atlas-Agena	S	U
OGO-II (C) (POGO)	14 Oct 65	Thor-Agena	S	U
OGO-III (B) (EGO)	7 Jun 66	Atlas-Agena	S	S
OGO-IV (D) (POGO)	28 Jul 67	Thor-Agena	S	S
OGO-V (E)	4 Mar 68	Atlas-Agena	S	S
OGO-VI (F)	5 Jun 69	Thor-Agena	S	S
TOTAL (Success/Attempts)			6/6	4/6
Orbiting Solar Observatory				
OSO-1 (S-16)	7 Mar 62	Thor-Delta	S	S
OSO-2 (B-2)	3 Feb 65	Thor-Delta	S	S
OSO-C	25 Aug 65	Thor-Delta	U	U
OSO-3 (E)	8 Mar 67	Thor-Delta	S	S
OSO-4 (D)	18 Oct 67	Thor-Delta	S	S
OSO-5 (F)	22 Jan 69	Thor-Delta	S	S
OSO-6 (G)	9 Aug 69	Thor-Delta	S	S
OSO-7 (H)	29 Sep 71	Thor-Delta	S	S
OSO-8 (I)	21 Jun 75	Delta	S	S
TOTAL (Success/Attempts)			8/9	8/9
Orbiting Astronomical Observatory				
OAO-I (A)	8 Apr 66	Atlas-Agena	S	U
OAO-II (A2)	7 Dec 68	Atlas-Centaur	S	S
OAO-B	30 Nov 70	Atlas-Centaur	U	U
OAO-C	21 Aug 72	Atlas-Centaur	S	S
TOTAL (Success/Attempts)			3/4	2/4

Summary Of Space Science Flight Mission Performance

By Program Activities

MISSION	LAUNCH		ASSESSMENT	
	DATE	VEHICLE	VEHICLE	MISSION
LUNAR & PLANETARY				
Ranger I (P- 32)	23 Aug 61	Atlas-Agena	U	U
Ranger II (P-33)	18 Nov 61	Atlas-Agena	U	U
Ranger III (P-34)	26 Jan 62	Atlas-Agena	U	U
Ranger IV (P-35)	23 Apr 62	Atlas-Agena	S	U
Ranger V (P-36)	18 Oct 62	Atlas-Agena	S	U
Ranger VI (A)	30 Jan 64	Atlas-Agena	S	U
Ranger VII (B)	28 Jul 64	Atlas-Agena	S	S
Ranger VIII (C)	17 Feb 65	Atlas-Agena	S	S
Ranger IX (D)	21 Mar 65	Atlas-Agena	S	S
TOTAL (Success/Attempts)			6/9	3/9
Lunar Orbiter I (A)	10 Aug 66	Atlas-Agena	S	S
Lunar Orbiter II (B)	6 Nov 66	Atlas-Agena	S	S
Lunar Orbiter III (C)	5 Feb 67	Atlas-Agena	S	S
Lunar Orbiter IV (D)	4 May 67	Atlas-Agena	S	S
Lunar Orbiter V (E)	1 Aug 67	Atlas-Agena	S	S
TOTAL (Success/Attempts)			5/5	5/5
Surveyor I (A)	30 May 66	Atlas-Centaur	S	S
Surveyor II (B)	20 Sep 66	Atlas-Centaur	S	U
Surveyor III (C)	17 Apr 67	Atlas-Centaur	S	S
Surveyor IV (D)	14 Jul 67	Atlas-Centaur	S	U
Surveyor V (E)	8 Sep 67	Atlas-Centaur	S	S
Surveyor VI (F)	7 Nov 67	Atlas-Centaur	S	S
Surveyor VII (G)	7 Jan 68	Atlas-Centaur	S	S
TOTAL (Success/Attempts)			7/7	5/7

Summary Of Space Science Flight Mission Performance

By Program Activities

MISSION	LAUNCH		ASSESSMENT	
	DATE	VEHICLE	VEHICLE	MISSION
LUNAR AND PLANETARY				
Pioneer I (Lunar)	11 Oct 58	Thor-Able I	U	U
Pioneer II (Lunar)	8 Nov 58	Thor-Able I	U	U
Pioneer III (Lunar)	6 Dec 58	Juno-II	U	U
Pioneer IV (Lunar)	3 Mar 59	Juno-II	S	S
Pioneer (P-3) (Lunar)	26 Nov 59	Atlas-Able	U	U
*Pioneer V (P-2)	11 Mar 60	Thor-Able IV	S	S
Pioneer (P-30) (Lunar)	25 Sep 60	Atlas-Able	U	U
Pioneer (P-31) (Lunar)	15 Dec 60	Atlas-Able	U	U
*Pioneer VI (A)	16 Dec 65	TAD	S	S
*Pioneer VII (B)	17 Aug 66	Delta	S	S
*Pioneer VIII (C)	13 Dec 67	Delta	S	S
*Pioneer IX (D)	8 Nov 68	Delta	S	S
*Pioneer E	27 Aug 69	Delta	U	U
Pioneer X (F) (Jupiter Flyby)	3 Mar 72	A-Centaur	S	S
Pioneer XI (G) (Jupiter Flyby)	6 Apr 73	A-Centaur	S	S
Pioneer/Venus-A	20 May 78	A-Centaur	S	S
Pioneer/Venus-B	8 Aug 78	A-Centaur	S	S
TOTAL (Success/Attempts)			10/17	10/17

*Deep Space Probe

Summary Of Space Science Flight Mission Performance

By Program Activities

MISSION	LAUNCH		ASSESSMENT	
	DATE	VEHICLE	VEHICLE	MISSION
LUNAR AND PLANETARY				
Mariner I (P-37)(Venus Probe-Failed)	22 Jul 62	Atlas-Agena	U	U
Mariner II (P-38)(Venus Flyby)	27 Aug 62	Atlas-Agena	S	S
Mariner III (C)(Mars Probe-Failed)	5 Nov 64	Atlas-Agena	U	U
Mariner IV (D) (Mars Flyby)	28 Nov 64	Atlas-Agena	S	S
Mariner V (E) (Venus Flyby)	14 Jun 67	Atlas-Agena	S	S
Mariner VI (F) (Mars Flyby)	25 Feb 69	Atlas-Centaur	S	S
Mariner VII (G) (Mars Flyby)	27 Mar 69	Atlas-Centaur	S	S
Mariner VIII (H) (Mars Orbiter -Failed)	8 May 71	Atlas-Centaur	U	U
Mariner IX (I) (Mars Orbiter)	30 May 71	Atlas-Centaur	S	S
Mariner X (J) (Venus/Mercury Flyby)	3 Nov 73	Atlas-Centaur	S	S
TOTAL (Success/Attempts)			7/10	7/10
Viking 1 (A)(Mars Lander & Orbiter)	20 Aug 75	Titan III Centaur	S	S
Viking 2 (B)(Mars Lander & Orbiter)	9 Sep 75	Titan III Centaur	S	S
TOTAL (Success/Attempts)			2/2	2/2
Voyager 2 (Jupiter/Saturn Flyby)	20 Aug 77	Titan III Centaur	S	S
Voyager 1 (Jupiter/Saturn Flyby)	5 Sep 77	Titan III Centaur	S	S
TOTAL (Success/Attempts)			2/2	2/2

Summary Of Communications Flight Mission Performance

By Program Activities

MISSION	LAUNCH		ASSESSMENT	
	DATE	VEHICLE	VEHICLE	MISSION
COMMUNICATIONS PROGRAM				
Suborbital Flights				
Echo (AVT-1)	15 Jan 62	Thor	S	S
Echo (AVT-2)	18 Jul 62	Thor	S	S
TOTAL (Success/Attempts)			2/2	2/2
Orbital Flights				
Echo (A-10)	13 May 60	Thor-Delta	U	U
Echo I (A-11)	12 Aug 60	Thor-Delta	S	S
Echo II (A-12)	25 Jan 64	Thor-Agena	S	S
Relay I (A-15)	13 Dec 62	Thor-Delta	S	S
Relay II (A-16)	21 Jan 64	Thor-Delta	S	S
Syncom I (A-25)	14 Feb 63	Thor-Delta	S	U
Syncom II (A-26)	26 Jul 63	Thor-Delta	S	S
Syncom III (A-27)	19 Aug 64	Thor-Delta	S	S
TOTAL (Success/Attempts)			7/8	6/8
Applications Technology Satellites				
ATS-I (B)	6 Dec 66	Atlas-Agena	S	S
ATS-II (A)	6 Apr 67	Atlas-Agena	U	U
ATS-III (C)	5 Nov 67	Atlas-Agena	S	S
ATS-IV (D)	10 Aug 68	Atlas-Centaur	U	U
ATS-V (E)	12 Aug 69	Atlas-Centaur	S	U
ATS-VI (F)	30 May 74	Titan III C	S	S
TOTAL (Success/Attempts)			4/6	3/6

Summary Of Earth Observations Flight Mission Performance

By Program Activities

MISSION	LAUNCH		ASSESSMENT	
	DATE	VEHICLE	VEHICLE	MISSION
EARTH OBSERVATIONS PROGRAM				
Tiros I (A-1	1 Apr 60	Thor-Able	S	S
Tiros II (A-2)	23 Nov 60	Thor-Delta	S	S
Tiros III (A-3)	12 Jul 61	Thor-Delta	S	S
Tiros IV (A-9)	8 Feb 62	Thor-Delta	S	S
Tiros V (A-50)	19 Jun 62	Thor-Delta	S	S
Tiros VI (A-51)	18 Sep 62	Thor-Delta	S	S
Tiros VII (A-52)	19 Jun 63	Thor-Delta	S	S
Tiros VIII (A-53)	21 Dec 63	Thor-Delta	S	S
Tiros IX (I EYE)	22 Jan 65	Thor-Delta	S	S
Tiros X (OT-1)	2 Jul 65	Thor-Delta	S	S
Tiros M (ITOS-1)	23 Jan 70	Thor-Delta	S	S
Tiros N	13 Oct 78	Atlas-F	S	S
TOTAL (Success/Attempts)			12/12	12/12
Nimbus I (A)	23 Aug 64	Thor-Agena	S	S
Nimbus II (C)	15 May 66	Thor-Agena	S	S
Nimbus B	18 May 68	Thor-Agena	U	U
Nimbus III (B-2)	14 Apr 69	Thorad-Agena	S	S
Nimbus D (4)	8 Apr 70	Thor-Agena	S	S
Nimbus E (5)	11 Dec 72	Delta	S	S
Nimbus F (6)	12 Jun 75	Delta	S	S
Nimbus G (7)	24 Oct 78	Delta	S	S
TOTAL (Success/Attempts)			7/8	7/8

Summary Of Special Applications Flight Mission Performance

By Program Activities

MISSION	LAUNCH		ASSESSMENT	
	DATE	VEHICLE	VEHICLE	MISSION
EARTH OBSERVATIONS PROGRAM (Cont'd)				
ERTS-A	23 Jul 72	Delta	S	S
Landsat-B (ERTS-B)	22 Jan 75	Delta	S	S
Landsat-C	5 Mar 78	Delta	S	S
TOTAL (Success/Attempts)			3/3	3/3
SMS-A	17 May 74	Delta	S	S
SMS-B	6 Feb 75	Delta	S	S
TOTAL (Success/Attempts)			2/2	2/2
SPECIAL APPLICATION PROGRAM				
PAGEOS I (A)	24 Jun 66	Thor-Agena	S	S
Explorer 36 (GEOS-II) (GEOS-B)	11 Jan 68	Thor-Agena	S	S
GEOS-3 (C)	9 Apr 75	Delta	S	S
LAGEOS-A	4 May 76	Delta	S	S
Seasat	26 Jun 78	Atlas-F	S	S
TOTAL (Success/Attempts)			5/5	5/5
APPLICATIONS EXPLORERS				
AEM-1 (HCMM)	26 Apr 78	Scout	S	S
AEM-2 (SAGE)	18 Feb 79	Scout	S	S
AEM-3 (MAGSAT)	30 Oct 79	Scout	S	S
TOTAL (Success/Attempts)			3/3	3/3

Summary Of Space Technology Flight Mission Performance

By Program Activities

MISSION	LAUNCH		ASSESSMENT	
	DATE	VEHICLE	VEHICLE	MISSION
SPACE TECHNOLOGY PROGRAM				
Suborbital Flights				
Reentry I (A)	1 Mar 62	Scout	S	U
Reentry II (B)	31 Aug 62	Scout	U	U
Reentry III (C)	20 Jul 63	Scout	U	U
Reentry IV (D)	18 Aug 64	Scout	S	S
Reentry V (E)	9 Feb 66	Scout	S	S
Reentry VI (F)	27 Apr 68	Scout	S	S
Fire I (Re-entry Test)	14 Apr 64	Atlas-X259	S	S
Fire II (Re-entry Test)	22 May 65	Atlas-X259	S	S
SERT-1A (Ion Engine Test)	20 Jul 64	Scout	S	S
RAM C-I (A) (Re-entry Test)	19 Oct 67	Scout	S	S
RAM C-II (B) (Re-entry Test)	22 Aug 68	Scout	S	S
RAM C-III (C) (Re-entry Test)	30 Sep 70	Scout	S	S
PAET (Re-entry Test)	20 Jun 71	Scout	S	S
TOTAL (Success/Attempts)			11/13	10/13
Orbital Flights				
Explorer (S-55) (Micrometeoroids)	30 Jun 61	Scout	U	U
Explorer 13 (S-55A) (Micrometeoroids)	25 Aug 61	Scout	U	U
Explorer 16 (S-55B) (Micrometeoroids)	16 Dec 62	Scout	S	S
Explorer 23 (S-55C) (Micrometeoroids)	6 Nov 64	Scout	S	S
Pegasus I (A) (Micrometeoroids)	16 Feb 65	Saturn I (SA-9)	S	S
Pegasus II (B) (Micrometeoroids)	25 May 65	Saturn I (SA-8)	S	S
Pegasus III (C) (Micrometeoroids)	30 Jul 65	Saturn I (SA-10)	S	S
SERT-II (Ion Engine Test)	4 Feb 70	Thor-Agena	S	U
Explorer 46 (MTS) (Micrometeoroids)	13 Aug 72	Scout	S	S
TOTAL (Success/Attempts)			7/9	6/9

Unofficial Tabulation Of USSR Spaceflights

	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	TOTAL
1. Sputnik	2	1	-	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10
2. Luna (Lunik)	-	-	3	-	-	-	2*	-	4	5	-	1	1	2	2	1	1	2	-	1	-	-	-	-	25
3. Vostok, Voskhod	-	-	-	-	2	2	2	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8
4. Cosmos	-	-	-	-	-	12	12	27	52	34	61	64	55	72	81	72	85	74	85	101	86	96	79	88	1236
5. Venus (Venik)	-	-	-	-	-	3*	-	-	2	-	1	-	2	1	-	1	-	-	2	-	-	2	-	-	14
6. Mars	-	-	-	-	-	3*	-	-	-	-	-	-	-	-	2	-	4	-	-	-	-	-	-	-	9
7. Polyot	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
8. Electron	-	-	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4
9. Zond	-	-	-	-	-	-	-	2	1	-	-	3	1	1	-	-	-	-	-	-	-	-	-	-	8
10. Molniya	-	-	-	-	-	-	-	-	2	2	3	3	2	5	3	6	8	7	10	7	6	6	5	4	79
11. Proton	-	-	-	-	-	-	-	-	2	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	4
12. Sayuz (Union)	-	-	-	-	-	-	-	-	-	-	1	2	5	1	2	-	2	3	4	3	3	5	4	6	41
13. Meteor	-	-	-	-	-	-	-	-	-	-	-	-	2	4	4	3	2	5	4	3	4	-	3	2	36
14. Intercosmos	-	-	-	-	-	-	-	-	-	-	-	-	2	2	1	3	2	2	2	2	1	2	2	-	21
15. No Designation	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
16. Salyut-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	2	-	1	1	-	-	-	6
17. Oreol-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-	2
18. PROGNOZ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	1	-	1	1	1	1	-	1	8
19. USSR International Cooperatives	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	2	-	1	-	1	-	5
20. Raduga	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	2	7
21. Ekran	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	2	2	6
22. Progress	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	3	4	11
23. Radio	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	2
24. Gorizont	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	1	4
Total to Date	2	1	3	3	6	20	17	35	64	44	66	74	70	88	97	89	107	95	111	121	105	120	102	110	1550

*Includes launches identified by the US but not announced by the USSR.

Source: Foreign Broadcasting Information Service

Soviet Spacecraft Designations

COSMOS: Cosmos appeared as a designator in 1962 to be used for explaining many different Soviet activities in space without giving specific details.

GORIZONT: Communications Satellite

EKRAN: Television Broadcasting Satellite

ELEKTRON: Satellites launched in pairs (with apogees of 4,000 miles and 40,000 miles) to map radiation belts.

INTERCOSMOS: Scientific satellites carrying experiments from other countries which make the payloads "international."

LUNA: Unmanned payloads launched to the Moon for lunar exploration. These include lunar orbiters, lunar landers, and lunar lander return missions.

MARS: Unmanned payloads launched to explore the planet Mars.

METEOR: Earth satellites primarily for collecting and reporting worldwide meteorological (weather) data. Early weather satellites were included in the Cosmos series.

MOLNIYA: A communications satellite appearing in a highly elliptical orbit over the same portion of the Earth each day on each of its climbs to apogee, giving good coverage to the Soviet Union.

OREOL: Scientific satellite intended to study physical phenomena in upper atmosphere and for studying the nature of the polar lights. Luanched jointly with Fr ance.

POLYOT: Earth satellites incorporating onboard propulsion systems for changing orbits.

PROGNOZ: "FORECAST" - A solar irradiation and magnetosphere satellite for changing orbits.

PROGRESS: Cargo supply ship

RADIO: Amateur Radio Satellite

RADUGA: Geosynchronous Communications Satellite.

SALYUT: The first Earth orbiting space station for prolonged occupancy and revisitation by Cosmonauts.

SOYUZ: A manned spacecraft incorporating provisions for three Cosmonauts.

SPUTNIK: An early designation for Soviet unmanned orbiting payloads. These included scientific payloads and unmanned tests of the Vostok spacecraft.

VENUS (VENERA): Unmanned payloads launched to explore the planet Venus.

VOSKHOD: Adaptation of the Vostok capsule to accommodate two and three Cosmonauts. Vokhod I orbited three persons and Voskhod II orbited two persons performing the first manned extravehicular activity.

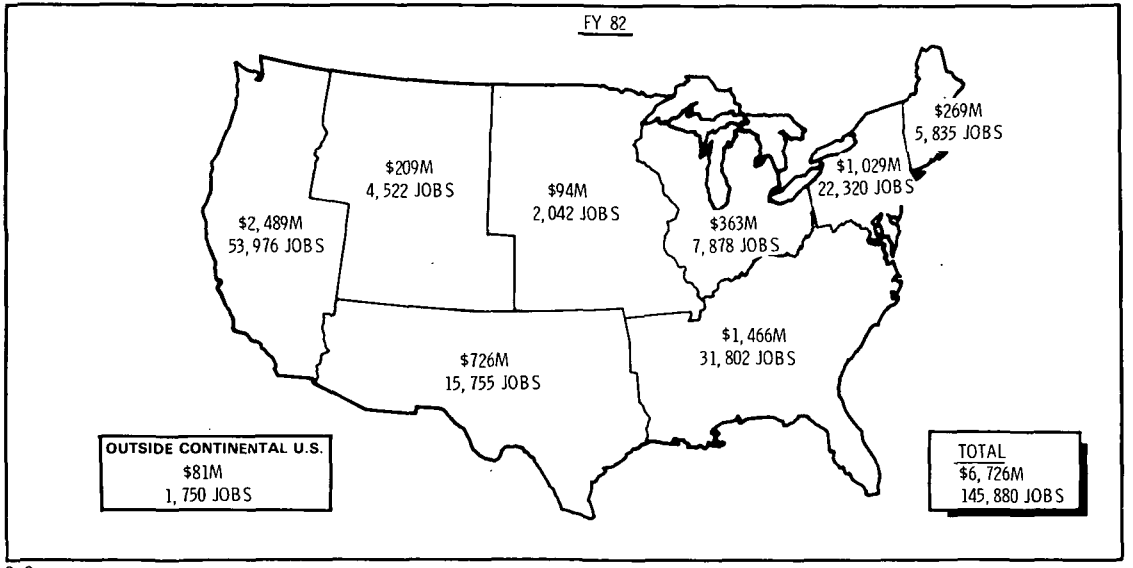
VOSTOK: The Soviet's first manned capsule, roughly spherical, used to place the first six Cosmonauts in Earth orbit.

ZOND: Lunar and deep space probes not otherwise designated. Includes circumlunar spacecraft.

Section C

Funding, Manpower, & Facilities

NASA JOBS AND FUNDING DISTRIBUTION



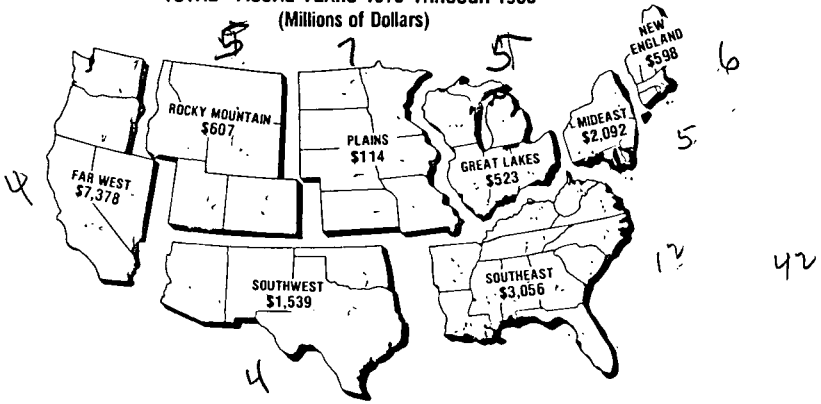
TOTAL EMPLOYMENT ON NASA PROGRAMS

	JUNE 1960	JUNE 1961	JUNE 1962	JUNE 1963	JUNE 1964	JUNE 1965	JUNE 1966	JUNE 1967	JUNE 1968	JUNE 1969	JUNE 1970
TOTAL EMPLOYMENT	46,786	74,577	137,656	246,304	379,084	409,900	393,924	306,926	267,871	218,345	167,803
CONTRACTOR EMPLOYMENT	36,500	57,500	115,500	218,400	347,100	376,700	360,000	273,200	235,400	186,600	136,580
NASA EMPLOYEES	10,286	17,077	22,156	27,904	31,984	33,200	33,924	33,726	32,471	31,745	31,223

	JUNE 1971	JUNE 1972	JUNE 1973	JUNE 1974	JUNE 1975	JUNE 1976	SEPT 1977	SEPT 1978	SEPT 1979	SEPT 1980	SEPT 1981
TOTAL EMPLOYMENT	149,609	144,968	134,055	125,054	127,733	132,039	124,069	124,569	131,931	135,613	134,632
CONTRACTOR EMPLOYMENT	120,130	117,540	108,100	100,200	103,400	108,000	100,500	101,400	109,100	113,000	111,919
NASA EMPLOYEES	29,479	27,428	25,955	24,854	24,333	24,039	23,569	23,169	22,831	22,613	22,713

U.S. GEOGRAPHICAL DISTRIBUTION OF NASA PRIME CONTRACT AWARDS*

TOTAL - FISCAL YEARS 1976 THROUGH 1980
(Millions of Dollars)



*Excludes smaller procurements, generally those of less than $10,000; also excludes awards placed through other Government agencies, awards outside the U.S., and actions on the JPL contracts.

NASA CONTRACT AWARDS BY STATE (FY 80)

STATE	PRIME CONTRACT AWARDS TO STATE AMOUNT	% OF TOTAL
TOTAL	$3,958,221	100.0
Alabama	81,093	2.1
Alaska	1,493	*
Arizona	32,169	0.8
Arkansas	189	*
California	1,721,269	43.5
Colorado	92,273	2.3
Connecticut	115,330	2.9
Delaware	584	*
District of Columbia	11,372	0.3
Florida	401,030	10.1
Georgia	7,479	0.2
Hawaii	4,195	0.1
Idaho	78	*
Illinois	10,670	0.3
Indiana	24,810	0.6
Iowa	4,516	0.1
Kansas	3,754	0.1
Kentucky	1,117	*
Louisiana	173,007	4.4
Maine	120	*
Maryland	272,409	6.9
Massachusetts	53,264	1.3
Michigan	10,524	0.3
Minnesota	8,028	0.2
Mississippi	29,083	0.7
Missouri	5,865	0.2
Montana	114	*
Nebraska	175	*
Nevada	724	*
New Hampshire	1,714	*
New Jersey	39,497	1.0
New Mexico	17,323	0.4
New York	52,935	1.3
North Carolina	3,773	0.1
Ohio	90,040	2.3
Oklahoma	2,554	0.1
Oregon	2,675	0.1
Pennsylvania	100,609	2.5
Rhode Island	1,349	*
South Carolina	621	*
South Dakota	273	*
Tennessee	4,233	0.1
Texas	344,792	8.7
Utah	71,898	1.8
Vermont	335	*
Virginia	114,444	2.9
Washington	37,205	0.9
Wisconsin	4,969	0.1
Wyoming	248	*

*Less than .05 percent.

Financial Summary

(In Millions of Dollars)

As of 30 Sep 80

FISCAL YEAR	TOTAL APPROPRIATIONS	TOTAL DIRECT OBLIGATIONS	OUTLAYS			
			TOTAL	RESEARCH AND DEVELOPMENT (R&D)	CONSTRUCTION OF FACILITIES (CoF)	RESEARCH AND PROG. MGMT. (R&PM)
1959	330.9	298.7	145.5	34.0	24.8	86.7
1960	523.6	486.9	401.0	255.7	54.3	91.0
1961	966.7	908.3	744.3	487.0	98.2	159.1
1962	1,825.3	1,691.7	1,257.0	935.6	114.3	207.1
1963	3,674.1	3,448.4	2,552.4	2,308.4	225.3	18.7
1964	5,100.0	4,864.8	4,171.0	3,317.4	437.7	415.9
1965	5,250.0	5,500.7	5,092.9	3,984.5	530.9	577.5
1966	5,175.0	5,350.5	5,933.0	4,741.1	572.5	619.4
1967	4,968.0	5,011.7	5,425.7	4,487.2	288.6	649.9
1968	4,588.9	4,520.4	4,723.7	3,946.1	126.1	651.5
1969	3,995.3	4,045.2	4,251.7	3,530.2	65.3	656.2
1970	3,749.2	3,858.9	3,753.1	2,991.6	54.3	707.2
1971	3,312.6	3,324.0	3,381.9	2,630.4	43.7	707.8
1972	3,310.1	3,228.6	3,422.9	2,623.2	50.3	749.4
1973	3,407.6	3,154.0	3,315.2	2,541.4	44.7	729.1
1974	3,039.7	3,122.4	3,256.2	2,421.6	75.1	759.5
1975	3,231.2	3,265.9	3,266.5	2,420.4	85.3	760.8
1976	3,551.8	3,604.8	3,669.0	2,748.8	120.9	799.3
TQ	932.2	918.8	951.4	730.7	25.8	194.9
1977	3,819.1	3,858.1	3,945.3	2,980.7	105.0	859.6
1978	4,063.7	4,000.3	3,983.1	2,988.7	124.2	870.2
1979	4,561.2	4,557.5	4,196.5	3,138.8	132.7	925.0
1980	5,243.4	5,098.1	4,851.6	3,701.4	140.3	1,009.9

R&D Funding By Program

(In Millions of Dollars) As of 30 Sep 80

	FY 1980	FY 1979	FY 1978	FY 1977	FY 1976 & Prior
OSTS					
Space Shuttle	1,870.3	1,637.6	1,348.8	1,412.6	3,187.9
Space Flight Operations	206.3	215.8	208.8	180.7	3,700.5
STS Operations Capability Dev	(20.7)	(31.6)	(26.9)	(1.8)	(30.8)
Development Test & Mission Sys	(172.6)	(177.2)	(171.9)	(166.9)	(882.1)
..dvanced Programs	(13.0)	(7.0)	(10.0)	(12.0)	(87.3)
Skylab	--	--	--	--	(2,428.7)
Apollo Soyuz Test Project	--	--	--	--	(216.9)
Planning & Program Integration	--	--	--	--	(54.7)
Ad. Manned Missions	--	--	--	--	89.7
Completed Programs	--	--	--	--	22,023.4
Apollo	--	--	--	--	(20,446.6)
Gemini	--	--	--	--	(1,281.0)
Other Completed Programs	--	--	--	--	(295.8)
TOTAL OSTS	2,076.6	1,853.4	1,557.6	1,593.3	29,001.5
OSTO					
Expendable Launch Vehicles	67.4	73.6	136.5	133.2	2,158.6
Space Flight Operations	240.3	83.9	55.0	15.0	17.9
STS Operations	(148.1)	(25.6)	(16.5)	--	--
STS Operations Capability Dev	(92.2)	(58.3)	(38.5)	(15.0)	(17.9)
TOTAL OSTO	307.7	157.5	191.5	148.2	2,176.5

R&D Funding By Program

(In Millions of Dollars) As of 30 Sep 80

	FY 1980	FY 1979	FY 1978	FY 1977	FY 1976 & Prior
OSS					
Physics & Astronomy	335.6	268.8	211.9	154.0	2,021.7
Planetary Exploration	219.4	181.9	146.7	187.0	3,364.5
Life Sciences	43.8	40.1	33.3	22.1	123.7
Manned Space Sciences	--	--	--	--	46.4
Launch Vehicle Dev.	--	--	--	--	614.4
Bioscience	--	--	--	--	257.8
Space Applications	9.0	7.3	2.1	--	--
TOTAL OSS	607.8	498.1	394.0	363.1	6,428.5
OSTA					
Space Applications	319.5	264.6	230.0	195.2	1,900.1
Tech. Utilization	12.0	9.1	9.1	8.1	65.4
Physics and Astronomy	--	13.0	11.2	11.4	4.5
Space Flight Operations	--	--	4.0	3.5	.2
Planning & Program Integration	--	--	(4.0	(3.5)	(.2)
TOTAL OSTA	331.5	286.7	254.3	218.2	1,970.2
OSTDS					
Tracking & Data Acquisition	332.1	299.9	276.3	253.3	3,600.9
OCE					
Standards & Practices	5.0	9.0	9.0	8.3	16.0
Space Shuttle	.7	.7	.4	.5	1.0
TOTAL OCE	5.7	9.7	9.4	8.8	17.0

R&D Funding By Program

(In Millions of Dollars) As of 30 Sep 80

	FY 1980	FY 1979	FY 1978	FY 1977	FY 1976 & Prior
OAST					
Current Programs					
Space Research & Tech.	110.6	98.3	88.7	73.7	358.4
Aeronautical Research & Tech	308.3	264.1	228.0	190.3	808.8
Energy Tech. Applications	3.0	5.0	7.5	6.0	14.8
Prior Programs					
Apollo Applications Expr.	--	--	--	--	1.0
Chemical & Solar Power	--	--	--	--	62.3
Basic Research	--	--	--	--	193.6
Space Vehicle Systems	--	--	--	--	332.4
Electronic Systems	--	--	--	--	272.0
Human Factor Systems	--	--	--	--	151.4
Space Power & Elec. Prop. Sys	--	--	--	--	385.5
Nuclear Rockets	--	--	--	--	512.9
Chemical Propulsion	--	--	--	--	365.4
Aeronautical Vehicles	--	--	--	--	451.5
Nuclear Power & Propulsion	--	--	--	--	44.2
Mission Analysis	--	--	--	--	16.1
TOTAL OAST	421.9	367.4	324.2	270.0	3,970.3
OPERATING ACCOUNT	4.8	4.5	4.3	4.1	61.3
UNIVERSITY AFFAIRS	--	--	--	--	229.2
TOTAL PROGRAM	4,088.1	3,477.2*	3,011.6**	2,859.0	47,455.4
Approp. Trans. & Adjustment	+3.0	--	+1.4	-2.6	307.4
Appropriation	4,091.1	3,477.2*	3,013.0**	2,856.4	47,762.8

**Includes .3 unobligated balance which lapsed 9-30-79.
*Includes .3 unobligated balance which lapsed 9-30-80.

R&D Funding By Location

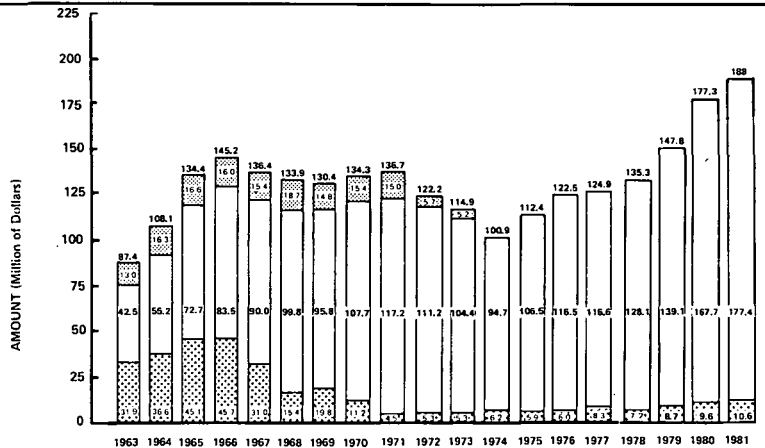
(In Millions of Dollars)

As of 30 Sep 80

	FY 1980	FY 1979	FY 1978	FY 1977	FY 1976 & Prior
INSTALLATION					
NASA Headquarters	133.8	115.3	95.0	95.7	2,147.5
Ames Research Center	142.2	140.4	115.5	113.1	1,063.1
Electronics Research Center	--	--	--	--	82.5
Dryden Flight Research Center	16.5	13.1	18.6	23.8	218.9
Goddard Space Flight Center	531.8	515.5	492.9	381.2	6,014.4
Jet Propulsion Laboratory	276.5	236.8	201.4	195.2	2,822.8
Kennedy Space Center	277.1	234.9	170.0	138.9	2,374.5
Langley Research Center	169.8	138.2	157.1	143.0	2,186.2
Lewis Research Center	168.1	148.5	133.6	148.6	2,706.2
Johnson Space Center	1,347.3	1,161.8	970.7	1,085.0	14,343.3
Marshall Space Flight Center	846.8	785.2	630.9	509.2	12,783.1
Space Nuclear Systems Office	--	--	--	--	436.2
Wallops Flight Center	16.7	17.1	15.9	17.6	138.9
Western Support Office	--	--	--	--	119.7
National Space Technology Labs.	9.2	9.2	10.0	7.7	13.1
NaPO	--	--	--	--	4.7
PLOO	--	--	--	--	.3
Station 17	-30.1	-38.8	--	--	--
Undistributed	182.6	--	--	--	--
TOTAL PROGRAM	4,088.1	3,477.2*	3,011.6**	2,859.0	47,455.4
Appropriations Transfer & Adjustments	+3.0	--	+1.4	-2.6	+307.4
Appropriation & Availability Total	4,091.1	3,477.2*	3,013.0**	2,856.4	47,762.8

**Includes .3 unobligated balance which lapsed 9-30-79.
*Includes .3 unobligated balance which lapsed 9-30-80.

University Funding



NOTES:

1. Excludes obligations to or through Federally Funded Research and Development Centers (e.g. JPL)
2. Change in status from "university" to "non-profit" for three organizations accounts for $10.1M of the difference between FY 73 and FY 74. (Draper Lab, ERIM, Dudley Observatory).
3. University Affairs Office includes 1962-1971 Sustaining University Program.
4. Omitted Obligations: Transition Period (July-Sept 1976). $27.7M; FY 59, $3.6M; FY60; $5.0M; FY 61, $14.5M, FY62, $29.5 M.

Source: NASA University Affairs Office

Construction Of Facilities

(In Millions of Dollars) — As of 30 Sep 80

INSTALLATION	FY 1980	FY 1979	FY 1978	FY 1977	TQ	FY 1976	FY 1975	FY 1974	FY 1973	FY 1972	FY 1971	FY 1970
Ames Research Center	2.9	9.8	--	4.5	--	2.7	3.7	--	3.2	6.5	1.1	.3
Electronics Research Center	--	--	--	--	--	--	--	--	--	--	Closed 6/30/70	
Dryden Flight Research Center	--	--	.4	.8	--	--	--	--	--	--	--	.9
Goddard Space Flight Center	--	5.6	4.5	--	--	--	1.9	1.4	.6	.7	1.4	.7
Jet Propulsion Laboratory	--	4.6	3.1	--	--	--	9.2	1.3	.5	--	1.9	--
Kennedy Space Center	5.8	--	2.1	2.8	--	--	--	--	10.0	15.6	.3	10.5
Langley Research Center	7.9	6.5	1.7	6.1	--	1.6	3.2	4.0	4.3	--	.6	5.6
Lewis Research Center	5.7	6.1	.8	2.9	--	--	3.7	--	9.7	.8	.7	.3
Johnson Space Center	--	--	2.5	2.2	--	--	.7	--	.6	--	1.1	--
Marshall Space Flight Center	6.6	--	--	--	--	--	3.8	--	--	--	1.3	--
Michoud Assembly Facility	--	--	--	--	--	--	--	--	--	--	--	--
National Space Technologies Lab	--	--	.6	--	--	--	--	--	--	--	--	1.5
Nuclear Rocket Dev. Station	--	--	--	--	--	--	--	--	--	--	--	--
Pacific Launch Operations	--	--	--	--	--	--	--	--	--	--	--	--
Wallops Flight Center	1.1	--	--	--	--	1.0	1.1	.8	.6	--	--	.6
Large Aeronautical Facilities	45.9	56.1	37.0	31.0	--	--	--	--	--	--	--	--
Various Locations	1.8	--	1.7	--	--	--	7.7	3.7	--	.7	22.5	26.4
Space Shuttle Facilities	27.8	31.1	64.9	30.7	--	46.7	77.4	56.8	27.9	18.5	--	--
Space Shuttle Payload Facilities	4.3	--	6.4	4.4	--	--	--	--	--	--	--	--
Repair	12.0	--	--	--	--	--	--	--	--	--	--	--
Rehabilitation & Modification*	19.8	12.8	18.9	17.8	7.0	15.9	14.8	14.8	11.6	7.9	(17.6)	(9.4)
Minor Construction	3.5	4.2	5.9	2.9	1.2	5.0	4.5	4.5	1.7	--	--	--
Facility Planning & Design	14.0	10.7	11.8	12.6	2.5	10.0	10.8	13.5	7.8	3.5	5.5	3.5
Unallocated Planning & Design	--	--	--	--	--	--	--	--	--	--	2.4	.5
TOTAL PLAN	159.1	147.5	162.3	118.7	10.7	82.9	142.5	100.8	78.5	54.2	38.8	50.6
Approp. Trans. & Adj.	-3.0	--	-1.4	-.6	+.1	-.8	-2.3	+.3	-1.2	-1.5	-13.8	+2.6
Approp. & Availability	156.1	147.5	160.9	118.1	10.8	82.1	140.2	101.1	77.3	52.7	25.0	53.2

*Included in Various Locations Prior to FY 1972

Construction Of Facilities

As of 30 Sep 80

(In Millions of Dollars)

INSTALLATION	FY 1969	FY 1968	FY 1967	FY 1966	FY 1965	FY 1964	FY 1963	FY 1962	FY 1961	FY 1960	FY 1959
Ames Research Center	.4	4.2	--	2.8	5.8	11.3	14.3	6.3	.6	6.1	3.8
Electronics Research Center	--	--	7.4	5.2	10.4	1.6	--	--	--	--	--
Dryden Flight Research Ctr.	--	--	--	--	--	2.5	1.8	--	--	1.8	--
Goddard Space Flight Center	--	.6	.7	2.4	2.2	17.7	21.3	11.5	9.4	14.0	3.9
Jet Propulsion Laboratory	--	3.1	.3	.9	3.6	3.0	11.4	3.6	8.6	7.7	--
Kennedy Space Center	7.4	20.4	34.6	7.2	87.8	273.4	332.8	115.6	27.8	4.0	--
Langley Research Center	--	--	6.4	8.4	3.3	9.7	9.8	6.9	12.3	4.5	10.8
Lewis Research Center	--	2.1	16.2	.9	.8	20.4	45.5	1.1	9.6	6.6	8.0
Johnson Space Center	1.0	.6	11.8	4.0	17.3	33.9	24.5	--	--	--	--
Marshall Space Flight Center	--	.9	--	1.8	12.0	28.2	40.5	30.7	26.1	--	--
Michoud Assembly Facility	.4	.5	.5	.3	6.2	7.3	28.5	--	--	--	--
National Space Technology Labs	--	--	--	--	58.4	102.9	77.1	--	--	--	--
Nuclear Rocket Dev. Station	--	--	--	--	--	4.1	11.5	--	--	--	--
Pacific Launch Ops. Office	--	--	--	--	.3	--	--	.6	.4	1.1	--
Wallops Flight Center	.5	.7	.2	1.0	1.7	.5	4.1	11.3	2.0	--	16.1
Various Locations	20.9	3.5	6.5	15.1	28.3	187.8	129.9	159.0	28.0	52.4	5.1
Facility Planning & Design	.9	5.4	5.5	5.0	8.8	10.4	12.9	9.8	--	--	--
Unallocated or Undistributed	--	--	--	--	--	23.7	--	--	--	--	--
TOTAL PROGRAM PLAN	31.5	42.0	90.1	55.0	247.0	738.4	765.9	356.4	124.8	98.2	47.7
Appro. Trans. & Adj.	-9.7	-6.1	-7.1	+5.0	+15.9	-58.4	+10.3	- 40.4	- 2.0	-13.6	+ .3
Appro. & Availability	21.8	35.9	83.0	60.0	262.9	680.0	776.2	316.0	122.8	84.6	48.0

Research And Program Management

(In Millions of Dollars)

As of 30 Sep 80

INSTALLATION	FY 1980	FY 1979	FY 1978	FY 1977	TQ	FY 1976	FY 1975	FY 1974	FY 1973	FY 1972	FY 1971	FY 1970
NASA Headquarters 1/	89.5	84.5	81.1	78.7	20.3	68.2	68.9	63.0	61.6	61.6	64.9	63.2
Ames Research Center	67.4	62.7	57.8	53.0	13.3	50.9	48.6	46.4	42.4	42.2	40.6	37.6
Electronics Research Center	--	---	--	--	--	--	--	--	--	--	--	19.1 3/
Dryden Flight Research Center	20.4	19.1	18.2	17.3	5.3	14.5	13.2	12.2	11.6	11.7	11.1	10.3
Goddard Space Flight Center	133.5	127.9	123.9	114.5	28.6	108.6	104.8	97.5	95.7	96.5	93.1	86.4
Kennedy Space Center	133.2	123.3	113.8	109.7	28.6	99.8	95.9	93.6	91.1	92.6	98.3	97.6
Langley Research Center	114.0	106.6	102.0	95.2	24.2	93.1	88.6	83.8	78.6	80.2	75.3	69.8
Lewis Research Center	94.8	87.5	84.9	83.6	22.2	80.7	80.3	79.8	81.2	82.5	78.0	73.9
Johnson Space Center	164.1	152.9	146.7	138.9	37.5	128.8	121.3	118.0	110.6	113.0	111.1	106.6
Marshall Space Flight Center	155.9	149.0	143.4	138.5	34.7	132.8	129.1	136.6	137.2	138.9	145.1	125.7
National Space Technologies Lab.	4.9	4.5	2.7	1.8	.5	1.8	1.6	1.6	--	--	--	--
Pacific Launch Operations	--	---	--	--	--	--	--	--	--	--	--	--
Space Nuclear Systems Office	--	---	--	--	--	--	--	--	1.1	2.2	2.4	2.3
Western Support Office	--	---	--	--	--	--	--	--	--	--	--	--
Wallops Flight Center	17.7	15.8	15.0	13.2	4.0	13.1	12.4	11.5	10.7	10.9	10.3	9.7
TOTAL PROGRAM PLAN	996.0	933.8	889.5	844.4	220.2	792.3	764.7	744.0	721.8	732.3	730.2 2/	702.2
Unobligated Balance Lapsing	.2	.3	.3	.2	.6	--	.2	.6	7.6	.3	.2	.4
Appro. Transfers, Net	--	---	--	--	--	--	- 4.9	--	--	+ 2.1	- 7.7	- 12.6
Appropriation Total	996 2	934.1	889.8	844.6	220.8	792.3	760.0	744.6	729.4	734.7	722.7	690.0

1/ Includes NaPO

2/ Includes $10 million for basic institutional and other requirements for agencies resident at MTF/Slidell.

3/ ERC was closed on June 30, 1970.

Research And Program Management

(In Millions of Dollars)

As of 30 Sep 80

INSTALLATION	FY 1969	FY 1968	FY 1967	FY 1966	FY 1965	FY 1964	FY 1963	FY 1962	FY 1961	FY 1960	FY 1959
NASA Headquarters 1/	60.8	57.1	57.4	54.4	69.3	47.1	51.3	26.0	13.9	8.5	5.7
Ames Research Center	34.0	33.8	33.8	33.2	31.8	29.9	25.6	22.9	19.9	17.8	16.3
Electronics Research Center	17.2	15.4	12.2	6.4	3.2	.5	--	--	--	--	--
Dryden Flight Research Center	9.7	9.5	9.5	9.4	10.5	9.4	7.5	7.2	5.1	4.3	3.3
Goddard Space Flight Center	73.2	68.3	71.1	64.4	93.3	61.9	52.8	39.1	20.4	15.5	1.8
Kennedy Space Center	95.8	93.1	92.7	82.0	40.8	29.8	18.8	6.4	--	--	--
Langley Research Center	63.0	62.2	64.3	63.5	59.0	52.1	51.8	46.6	39.1	33.0	31.4
Lewis Research Center	67.9	66.2	66.3	66.4	69.3	61.5	53.4	45.2	35.8	31.2	27.8
Johnson Space Center	98.9	95.7	95.7	86.5	88.7	64.7	51.0	24.1	9.2	--	--
Marshall Space Flight Center	116.3	126.2	128.7	128.4	138.7	124.3	112.6	89.2	68.6	5.1	--
Pacific Launch Operations	--	--	--	.6	.9	.9	.6	.1	--	--	--
Space Nuclear Systems Office	2.1	2.0	2.0	1.8	1.7	1.5	1.0	.3	--	--	--
Western Support Office	--	1.0	3.2	4.9	5.0	4.4	3.4	1.4	5.7	.5	--
Wallops Flight Center	9.1	8.8	9.7	9.3	11.1	8.8	8.9	7.1	5.0	2.7	1.3
TOTAL PROGRAM PLAN	648.0	639.3	646.6	611.2	623.3	496.8	438.7	315.6	222.7	118.6	87.6
Unobligated Balance Lapsing	.1	.1	.9	.6							
Appro. Transfers, Net	- 44.9	- 11.4	- 7.5	- 27.8	+ .2	- 2.8					
Appropriation Total	603.2	628.0	640.0	584.0	623.5	494.0					

1/ Includes NaPO

Personnel Summary

Onboard At End Of Fiscal Year*

As of 30 Sep 80

INSTALLATION	FY 80	FY 79	FY 78	FY 77	FY 76	FY 75	FY 74	FY 73	FY 72	FY 71	FY 70
NASA Headquarters	1,658	1,534	1,606	1,619	1,708	1,673	1,734	1,747	1,755	1,894	2,187
Ames Research Center	1,713	1,713	1,691	1,645	1,724	1,754	1,776	1,740	1,844	1,968	2,033
Dryden Flight Research Center	499	498	514	546	566	544	531	509	539	579	583
Goddard Space Flight Center	3,535	3,562	3,641	3,666	3,808	3,871	3,936	3,852	4,178	4,459	4,487
Kennedy Space Center	2,291	2,264	2,234	2,270	2,404	2,377	2,408	2,516	2,568	2,704	2,895
Langley Research Center	3,094	3,125	3,167	3,207	3,407	3,472	3,504	3,389	3,592	3,830	3,970
Lewis Research Center	2,901	2,907	2,964	3,061	3,168	3,181	3,172	3,368	3,866	4,083	4,240
Johnson Space Center	3,616	3,563	3,617	3,640	3,796	3,877	3,886	3,896	3,935	4,298	4,539
Marshall Space Flight Center	3,646	3,677	3,808	4,014	4,336	4,337	4,574	5,287	5,555	6,060	6,325
Space Nuclear Systems Office	--	--	--	--	-	-	-	-	45	89	103
NASA Pasadena Office (NaPO)	--	--	--	-	-	35	39	39	40	44	72
Wallops Flight Center	406	409	429	426	437	441	447	434	465	497	522
National Space Technology Lab	111	108	108	94	72	76	-	-	-	-	-
NASA TOTAL	23,470	23,360	23,779	24,188	25,426	25,638	26,007	26,777	28,382	30,506	32,548

*Includes Temporary Personnel
Excludes employees in the youth programs.

Personnel Summary

Onboard At End Of Fiscal Year*

INSTALLATION	FY 1969	FY 1968	FY 1967	FY 1966	FY 1965	FY 1964	FY 1963	FY 1962	FY 1961	FY 1960	FY 1959
NASA Headquarters	2,293	2,310	2,373	2,336	2,135	2,158	2,001	1,477	735	587	492
Ames Research Center	2,117	2,197	2,264	2,310	2,270	2,204	2,116 b/	1,658	1,471	1,421	1,464
Electronics Res. Center	951	950	791	555	250	33 b/	25 b/	---	---	---	---
Dryden Flt Research Ctr	601	622	642	662	669	619	616	538	447	408	340
Goddard Sp. Flt. Cen.	4,295	4,073	3,997	3,958	3,774	3,675	3,487	2,755	1,599	1,255	398
Kennedy Space Center	3,058	3,044	2,867	2,669	2,464	1,625	1,181	339	---	---	---
Langley Research Cen.	4,087	4,219	4,405	4,485	4,371	4,330	4,220	3,894	3,338	3,203	3,624
Lewis Research Center	4,399	4,583	4,956	5,047	4,897	4,859	4,697	3,800	2,773	2,722	2,809
Johnson Space Center	4,751	4,956	5,064	4,889	4,413	4,277	3,345	1,786	794	in GSFC	---
Marshall Sp. Flt. Center	6,639	6,935	7,602	7,740	7,719	7,679	7,332	6,843	5,948	370	---
Pacific Launch Ops.	---	---	---	d/	21	22	17	---	---	---	---
Space Nuclear Sys. Ofc.	104	108	113	115	116	112	96	39	4	---	---
Western Support Ofc.	---	c/	119	294	377	376	308	136	60	37	---
NASA Pasadena Ofc.	80	79	91	85	19	a/	---	---	---	---	---
Wallops Station	554	565	576	563	554	530	493	421	302	229	171
NASA TOTAL	33,929	34,641	35,860	35,708	34,049	32,499	29,934	23,686	17,471	10,232	9,235

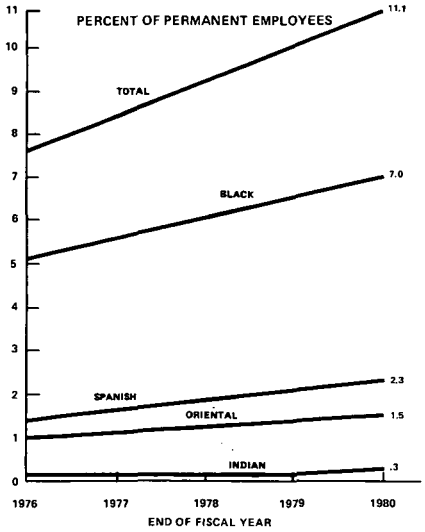
a/ Prior years figures included in WSO. * Includes Temporary Personnel

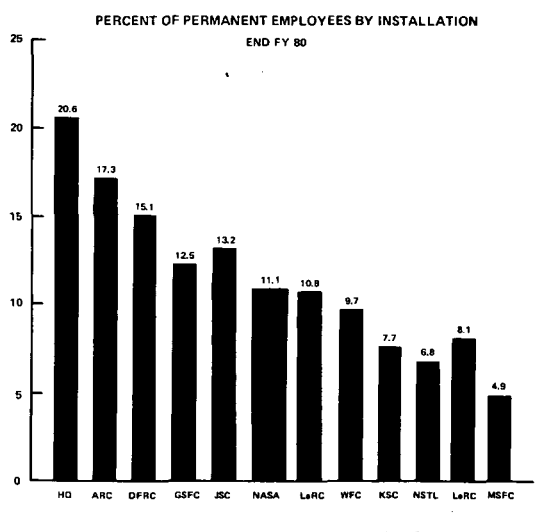
b/ Figures for North Eastern Office.

c/ Effective in 1968 WSO was disestablished and elements merged with NaPO

d/ Effective in 1966 PLOO activity was merged under KSC.

MINORITY EMPLOYEES





GLOSSARY

AD	Atmosphere Dynamics
AE	Atmosphere Explorer
AEM	Applications Explorer Mission
Apollo	Three-man Spacecraft
ATS	Applications Technology Satellite
BSE	Broadcasting Satellite Experimental
COS	Cosmic Ray Satellite
CRL	Cambridge Research Lab
CS	Communications Satellite
CTS	Communications Test Satellite
DE	Dynamic Explorer
ERTS	Earth Resources Technology Satellite
ESA	European Space Agency
ESRO	European Space Research Organization
ESSA	Environmental Science Services Agency
Gemini	Two-man Spacecraft
GEOS	Geodetic Earth Observations Satellite
GMS	Geostationary Meteorological Satellite
GOES	Geostationary Operational Environmental Satellite
HCMM	Heat Capacity Mapping Mission
HEAO	High Energy Astronomy Observatory
IMP	Interplantary Monitoring Platform
IRAS	Infrared Astronomical Satellite
ISEE	International Sun-Earth Explorer
ITOS	Improved Tiros Operational Satellite
IUE	International Ultraviolet Explorer
Landsat	Earth Resources Satellite
MAGSAT	Magnetic Satellite
Mercury	One-man Spacecraft
Nimbus	Meteorological Satellite
NOAA	National Oceanic & Atmospheric Agency
OT	*Operational Tiros*
OTS	Orbiting Test Satellite
RAE	Radio Explorer
Ranger	Lunar Probe Spacecraft
RFD	Re-entry Flight Demonstration
SAGE	Stratospheric Aerosol Gas Experiment
SAS	Small Astronomy Satellite
SBS	Satellite Business Systems
SCATHA	Spacecraft Charging at High Altitudes
Seasat	Ocean Research Satellite
SME	Solar Mesosphere Explorer
SMM	Solar Maximum Mission
SMS	Synchronous Meteorological Satellite
Surveyor	Lunar Soft Landing Spacecraft
Syncom	Synchronous Communications Satellite
Tiros	Television Infrared Observation Satellite
TOS	Tiros Operational Satellite

NASA

National Aeronautics and
Space Administration